A STUDY TO ASSESS THE EFFECTIVENESS OF EARLY WARNING SCORING SYSTEM AND EXECUTION OF NURSING INTERVENTIONS AMONG PATIENTS SUBJECTED TO OPEN ABDOMINAL SURGERIES IN POST ANAESTHESIA CARE UNIT AT KMCH COIMBATORE

Register No: 301610452

A DISSERTATION SUBMITTED TO THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY CHENNAI, IN PARTIAL FULFILMENT OF REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

OCTOBER 2018

CERTIFICATE

This is to certify that the Dissertation entitled **"A Study to assess the Effectiveness of early warning scoring system and execution of nursing interventions among patients subjected to open abdominal surgeries in Post anaesthesia care unit at KMCH Coimbatore"** is submitted to the faculty of Nursing, **The Tamilnadu Dr. M. G. R. Medical University, Chennai** by **Reg. No. 301610452** in partial fulfillment of requirement for the degree of Master of Science in Nursing. It is the bonafide work done by her and the conclusions are her own. It is further certified that this dissertation or any part thereof has not formed the basis for award of any degree, diploma or similar titles.

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S.NO	ABBREVIATION	ACRONYMS
1.	Early warning scoring system	EWSS
2.	Modified early warning scoring system	MEWS
3.	Post Anaesthetic recovery scoring system	PAS
4.	Post Anaesthesia care unit	PACU
5.	National Patient Safety Agency	NPSA
6.	National institute for clinical excellence	NICE
7.	Operation theatre	OT
8.	Standard deviation	SD
9.	Analysis of variance	ANOVA
10.	Repeated measure analysis of variance	RM ANOVA
11.	Social statistical package for the social science	SPSS
12.	American Society Post Anaesthesia Nurses	ASPAN

CHAPTER - I

INTRODUCTION:

The period in the post-anaesthesia care unit (PACU) is critical for the patients. The aims of the nursing care during this period include monitoring patient until stable status can be achieved, determining the potential problems in addition to the problems resulted from the anesthetic and surgical intervention, and applying an appropriate intervention.

All patients who are received general anaesthesia, regional anaesthesia, (or) monitored anaesthesia care shall meet discharge criteria for modified early warning scoring system. The physiological criteria that must be met for the safe discharge from post-anaesthesia care. Discharge criteria inclusive of a post anaesthesia recovery score system (PAS), will be used by the anaesthesia care RN to assess patient's readiness for discharge from post anaesthesia care.

(**The Joint Commission Accreditation Manual for Hospitals)**

These mainly focus on providing post anaesthesia patient care to the patient in the immediate post anaesthesia period, post anesthetic assessment guidelines are often focused on the role of the anesthesiologist however, due to nurses central role in the management of patients in the PACU setting, anesthesiologists often delegate the responsibility for evaluation of patient suitability for discharge to the PACU nurse.

The basic nursing practice of evidence is fundamental to optimal and effective care. Physiological parameters are used to assess a patient for discharge from a PACU.

In 1970 Aldrete was the first to propose a scoring method to evaluate patient readiness for discharge from the immediate post -operative recovery area. Aldrete asserted that a method for evaluation should be simple to implement, too easy to memories, have a low burden on PACU staff and be applicable to patients in all post - operative situations**. (Dr. Nicole M. Phillips DipAppSc (Nsg)).**

The time immediately following a general anaesthetic is a critical period for patient recovery. Requiring intensive observation to enable early detection of

complications from surgery. Since its introduction 1923, the post anaesthesia care unit (PACU) has been the preferred location for the immediate recovery of the post - operative patient.

The patient's length of stay in the PACU is dependent upon a number of factors, including pre- operative health status, surgical procedure, type of anaesthetic and the stability of vital signs, it has been common practice for PACU discharge policies to stimulate a minimum length of stay, with a patient's readiness for discharge traditionally relying upon nursing assessment of normality and stability of physiological parameters.

The Early Warning Scoring System, or EWSS, which can encourage early intervention, timely transfer to a higher level of care and prevention of codes. EWSS originated in the United Kingdom. Over the last few years, U.S. hospitals have begun to utilize the tool here in the states. Implementing EWSS "adds another layer of early detection to the RRT system" and allows the healthcare team to intervene earlier. One widely used version is the Modified Early Warning System (MEWS). Healthcare personnel enter vital signs on a chart form that has red-shaded zones to identify findings outside the normal range for six vital signs, namely: Respiratory rate, heart rate, blood pressure, level of consciousness, temperature and hourly urinary output.(**By Bette Case DI Leonardi).**

The recovering patient is awake, opens eyes, extubated, blood pressure and pulse are satisfactory, can lift head on command, not hypoxic, breathing quietly and comfortably, appropriate analgesic, has been prescribed and is safely established fit for the ward.

Now days, hospitals are treating increasingly complex patients with multiple co-morbidities. At any given time some of these patients may be rapidly deteriorating, for a variety of reasons. Every hospital must have a strategy to identify such patients, and be capable of providing the appropriate level of care at the right time. Early intervention on a patient who is deteriorating is likely to improve that patient outcome.

The intersection of deteriorating patients, early warning scores, a rapid response team and new monitoring technology well implemented early warning scores can help rapid response teams in improving outcomes.

The modified early warning scoring system is a simple physiological score that may allow improvement in the quality and safety of management provided to surgical ward patients. During the post-operative period, nursing care focuses on reestablishing the patient's physiologic equilibrium.

Each individual patient care space is supplied with a cardiac monitor, blood pressure monitoring device, pulse oximeter, airway management equipment, suction, and oxygen. Emergency medications and equipment are centrally located. Isolation rooms are available if needed.

Nursing care in the immediate postoperative phase focuses on maintaining ventilation and circulation, monitoring oxygenation, monitoring levels of consciousness, preventing shock and managing pain.

Morgan, Williams and Wright in the UK in 1997 developed Early Warning Scores (EWS), a score of five physiological parameters (heart rate, systolic blood pressure, respiratory rate, temperature and conscious level). Initially, it was not developed to predict outcome, but to serve as a track-and-trigger system (TTS) to identify early signs of deterioration. Since it has been modified and in addition to the original five physiological parameters in most EWS oxygen saturation has been included.

Modified Early Warning Score or MEWS has been developed to ensure timely identification of patients at risk of deterioration and prevent delay in intervention or transfer of critically ill patients.

The MEWS is a tool for nurses to help monitor their patients and improve how quickly a patient experiencing a sudden decline receives clinical care.

The MEWS is proposed for early identification of patient's deterioration. The MEWS calculation can help the anesthetist select the correct level of care to avoid inappropriate admission to the ICU and to enhance the use of the high dependency unit after emergency surgical procedures.

Modified early warning scores (MEWS) are now commonly used for the assessment of unwell patients. These simple observations can detect when a patient's condition requires a more intense observation and should be a trigger for further investigation as early intervention can reduce morbidity and mortality in unwell patients (NPSA 2007)

This tool promotes integration of care, and acts as a method for assessing the efficacy of medical interventions and can reduce the need for unnecessary hospital admissions. The MEWS is a tool that is based on physiological parameters and these should be recorded on an initial assessment for unwell patients (or) as part of routine monitoring where a patient's medical condition dictates, heart rate, respiratory rate, blood pressure, level of consciousness and temperature (NICE 2007).

NEED FOR THE STUDY:

Postoperative complications such as hypoxia, hypotension, hypertension, changes in consciousness, chronic pain, surgical bleeding, nausea and vomiting, hypothermia, hyperthermia, skin color changes and changes in dressing site and reflex abnormalities. So, early identification of complications allows the immediate and nursing interventions.

In PACU patients early detections of the post-operative complications may become possible applying the modified early warning scoring system.

The MEWS is providing the systemic approach for patient's assessment with risks and help with early identification of patients with worsening clinical status. The Modified Early Warning Score (MEWS) is a bedside scoring system that is non-invasive, simple and repeatable to reflect dynamic changes in physiological state a scoring system using bedside measurements (Early Warning Score, EWS) was developed in 2001 and initially evaluated in medical admissions and critically unwell patients. EWS is calculated using hourly measurements of 6 bedside parameters (pulse, respiratory rate, temperature, conscious level, urine output and blood pressure) to provide a score of 0-30.

The modified early warning score is a simple, physiological score may allow improvement in the quality and safety of management provided to surgical ward

patients. The primary purpose is to prevent delay in intervention (or) transfer of critically ill patients.

There has been increasing recognition that the care provided to patients in hospital who deteriorate clinically, (or) show signs that may deteriorate unexpectedly, has a marked impact on patient mortality, morbidity and length of stay both in the hospital overall and in a critical care should they be admitted to critical care.

Clinical deterioration can occur any stage of a patient's illness, although there will be certain periods during which a patient is more vulnerable, such as at the onset of illness, during surgical or medical intervention and during recovery from critical illness. Patients on general adult wards who are at risk of deteriorating may be identified before a serious adverse event by changes in physiological observations recorded by clinical staff.

The interpretation of these changes and timely institution of appropriate clinical management once physiological deterioration is identified is of crucial importance if the likelihood of serious adverse events including cardiac arrest and death is to be minimized. Care strategies following a period of critical illness are also likely to have a significant impact on patient outcomes.

A recent report from the National Confidential Enquiry into Patient Outcome and Death (NCEPOD) (An Acute Problem', NCEPOD 2005) identified delayed recognition and referral as prime causes of the substandard care of the acutely unwell patients in hospital. The report found that on a number of occasions this was aggravated by poor communication between the acute medical, surgical and critical care medical teams. It also identified examples in which there was a lack of awareness by medical consultants of their patients deteriorating health and their subsequent admission to critical care. Admission to an intensive care unit (ICU) was thought to have been avoidable in 21% of cases and the authors felt that sub-optimal care contributed to about a third of the deaths that occurred.

This tool aims to assist the registered nurse to determine a course of action in the event becoming unwell (or) presenting with an abnormal physiological status.

- To improve the quality of patient baseline observations and monitoring and allow for timely intervention (or) if needed admission to hospital.
- To improve communication within the multidisciplinary team.
- Support clinical judgment and aid in securing appropriate assistance for unwell patients.

- MEWS might also be a useful screening tool to triage patients who may require medical review and intervention.

STATEMENT OF THE PROBLEM:

A study to assess the effectiveness of early warning scoring system and execution of nursing interventions among patients subjected to open abdominal surgeries in the Post Anaesthesia Care Unit in KMCH Coimbatore.

1.3 OBJECTIVES:

The objectives of the study are to

- Asses the trend of early warning signs of patients following open abdominal surgeries.
- Assess the effectiveness of nursing interventions based on early warning scoring system among patients following open abdominal surgeries.
- To determine the effectiveness of MEWS among patients subjected to open abdominal surgeries.

1.4 OPERATIONAL DEFINITIONS

EARLY WARNING SCORING SYSTEM (EWSS):

It refers to a guide used by nurses to quickly determine the degree of illness of a patient. It is based on the six cardinal vital signs. (Respiratory rate, Oxygen saturation, Temperature, Blood pressure, Pulse/Heart rate, AVPU)

NURSING INTERVENTIONS:

It refers to the actual treatments & actions that are performed to help the patient to reach the goals that are set for them. The nurse uses his (or) her knowledge, experience & critical thinking skills to decide which interventions will help the patient the most.

MAJOR SURGERIES:

It refers to open abdominal procedures extending more than one hour.

POST ANAESTHESIA CARE UNIT (PACU):

It is an area, normally attached to operating room suites, designed to provide care for patients recovering from general anaesthesia, regional anaesthesia or local anaesthesia.

1.5 HYPOTHESIS:

There will be a significant effect on execution of nursing interventions initiated based on the early warning scoring system in the prevention of post-operative complication.

1.6 ASSUMPTION:

The post-operative complication as preventable, if identified early and intervened appropriately.

The anaesthesia given during surgery induces post-operative complications.

Conceptual framework

The conceptual framework for this study was developed on the basis of Ida Jean Orlando (Pelletier). She proposed her model in 1926, which was further clarified and refined in 1961.

Orlando's Nursing Theory revolves around 5 major interrelated concepts.

1. Function of professional nursing,

2. Presenting behavior of the patient,

3. Immediate (or) internal response of the nurse,

4. Nursing process discipline,

5. Improvement.

1. Nurses responsibility - Refers to the responsibility to see that patients need for help are met either directly by her own activity (or) indirectly by calling in the help of others.

2. Need-Need is situationally defined as requirement of the patient, which if supplied relief's (or) diminishes his\her immediate distress and improve his/her immediate sense of adequacy (or) well-being.

3. The presenting behavior of the patient - It is any observable, verbal (or) non-verbal behavior of the patient.

4. Immediate reaction includes nurses and patients' individual perception, thoughts and feelings.

5. Nursing process discipline includes nurse communicating to patient his/her own immediate reaction clearly identifying that the item expressed belongs to the nurse and then asking for validation (or) correction.

6. Improvement means to grow better, to turn, to profit and to use to advantage.

The attributes adopted for this study are

1. Behavior of the patient (Subjective and objective assessment).

2. Reaction of the nurse (Nursing diagnosis, planning for action).

3. Nursing action (Implementing action for the patient's benefit).

4. Orlando proposes that nurse's should help relieve physical and mental discomfort and should not act to the patient distress. This assumption is evident in the concept of improvement in patient's behavior as the indented outcome of the nursing action. This is done in the last phase that is an evaluation, which helps in a reassessment.

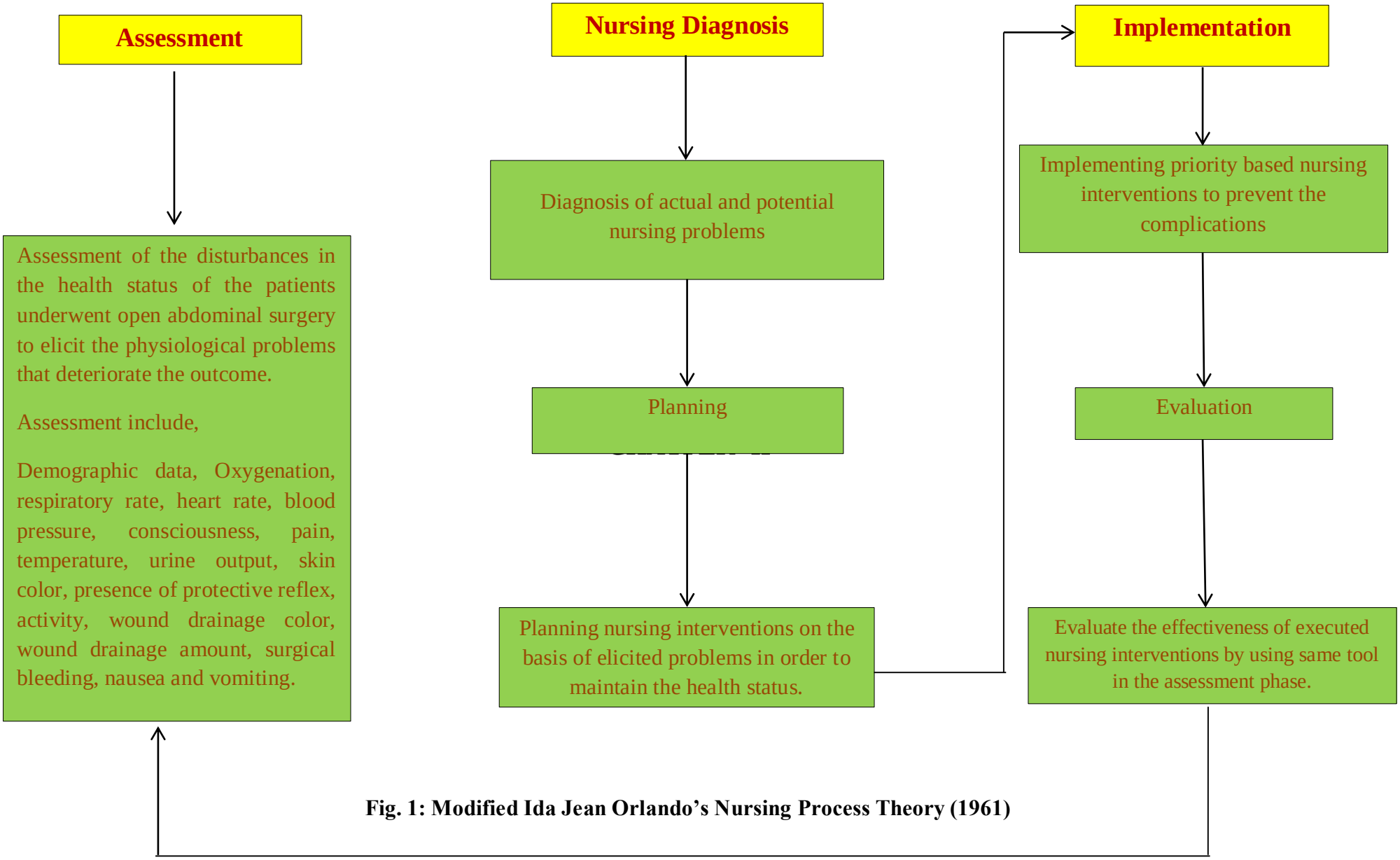

Fig. 1: Modified Ida Jean Orlando's Nursing Process Theory (1961)

CHAPTER – II

REVIEW OF LITERATURE

An extensive review is made to strengthen the present in order to lay down the foundation. It familiarizes the investigator with a previous investigation related to one field of interest and various methods and procedure which can be pursued.

The literature reviewed for this study is presented as follows,

- MEWS is the timely, early identification of clinical deterioration, prevent the delayed nursing interventions.
- Effect of the modified early warning scoring system in the PACU.

2.1 MEWS is the timely, early identification of clinical deterioration; prevent the delayed nursing interventions

Petersen JA (2017) EWS reduces complex clinical conditions for a single number, with the inherent risk to overlook clinical cues and subtle changes in a patient's condition. They showed that identifying and treating deteriorating patients is a collaborative task that requires diverse technical and non-technical skills for staff to perform optimally.

C.L. Downey (2017) early warning scores provides the right language and environment for the timely escalation of patient care. They are limited by their intermittent and user- dependent nature, which can be partially overcome by automation and new continuous monitoring technologies, although clinical judgment remains paramount.

Jean Christian (2016) Studied the Applicability of the modified early warning Score (mews) in predicting outcome of patients Undergoing abdominal surgery and concluded that The MEWS can be effectively used in patients admitted in surgical wards in a low resource setting hospitals as an important risk management tool to ensure timely identification of patients at risk of deterioration and to prevent delay in Intervention or transfer of critically ill patients.

Wilson et al., (2016) compared clinical acumen of nursing staff in predicting deterioration and MEWS score and concluded that MEWS score is better.

Liljehult, et al (2016) Early warning score is a simple and valid tool for identifying patients at risk of dying after acute stroke. Readily available physiological parameters are converted to a single score, which can guide both nurses and physicians in clinical decision making and resource allocation.

Una kyriacos, (2014) studied A MEWS for developing countries should record at least seven parameters. Experts from developing countries are best placed to stipulate cut points in physiological parameters. Further research is needed to explore the ability of the MEWS chart to identify physiological and clinical deterioration.

Smith ME, et al. (2014) early warning system scores perform well for prediction of cardiac arrest and death within 48 hours, although the impact on health outcomes and resource utilization remains uncertain, owning to methodological limitations. Efforts to assess the performance and effectiveness more rigorously will be needed as early warning system uses become widespread.

Aravind Suppiah (2014) tells about the Modified Early Warning Score (MEWS) is a bedside scoring system that is non-invasive, simple and repeatable to reflect dynamic changes in physiological state. Objective this study aims to assess accuracy of MEWS and determine an optimal MEWS value in predicting severity in acute pancreatitis (AP). This is the first report on the novel use of MEWS as a prognostic indicator in patients referred with Acute Pancreatitis. It is inexpensive, accessible, and less invasive than any other scoring system used in AP.

Alam N et al. (2014) the EWS it is a simple and easy to use tool at the bedside, which may be of help in recognizing patients with potential for acute deterioration. Coupled with an outreach service, it may be used to timely initiate adequate treatment upon recognition, which may influence the clinical outcomes positively.

Correia N et al. (2014) EWS systems are not widely used in Portuguese health service clinical worsening, lengths of stay, admission into high care units, and mortality may be predicted by the EWS.

Naomi e. Hammond, (2012) explains in the MEWS system to identify the deteriorating patient early so that timely interventions can occur along with improved patient outcomes .We recommend standardized documentation, continued education, regular auditing to identify strengths and weakness with the use of the system to assist nursing staff to accurately record vital signs and be able to recognize deteriorating patients when using the MEWS system.

Churpek MM, et al (2012) the cardiac arrest risk triage score is simpler and more accurately detected cardiac arrest and intensive care unit transfer than the modified warning score. Implementation of this tool may decrease rapid response team resource utilization and provide a better opportunity to improve patient outcomes than the MEWS.

U. kyriacos (2011) Better monitoring of patients implies better care, but sources indicate that the impact of vital signs_ monitoring and MEWS/EWS systems has yet to be tested. Nevertheless, is sufficient evidence of observational work that MEWS/EWS systems facilitate recognition of abnormal physiological parameters in deteriorating patients, alerting ward staff to the need for intervention.

Julie Considine in (2009) derangements in temperature, respiratory rate, heart rate appears to increase risk of critical care admission. Further work using a prospective approach is needed to establish which physiological parameters have the highest predictive validity, the level of physiological abnormality with highest clinical utility, and the optimal timing for collection of physiological data.

V C Burch (2008) the MEWS, specifically five selected parameters, may be used as a rapid, simple triage method to identify a medical patient's in need of hospital admission and those at increased risk of in hospital death.

Thorpe et al., in (2006) studies the use of NEWS in 334 surgical in patients and concluded that the MEWS in association with a call-out algorithm is a useful and appropriate risk-management tool that should be implemented for all surgical inpatients.

J Gardner -Thorpe. In (2006) The MEWS in association with a call-out algorithm is a useful and appropriate risk management tool that should be implemented for all surgical patients.

2.2 Effect of the modified early warning scoring system in the PACU.

Blankush JM, in (2017) studied the MEWS with etco2 for postoperative monitoring and concluded that the combination of MEWS and etco2 is a reliable indicator combination of MEWS and etco2 is a reliable indicator of post-operative morbidity.

Erlend Skraastad (2017) studied the ESS fulfills suggested criteria for score quality validation and reflects the patients post-operative status adequately and with high sensitivity.

Further clinical trials are warranted to evaluate the usefulness of ESS as a simple tool for assessment of the post-operative safety and quality of patients.

Hollis RH et al (2016) studied the critical post- operative complications can be preceded by rising EWS. Intervention studies are needed to evaluate whether EWS can reduce the severity of post -operative complications and mortality for surgical patients through early identification and intervention.

Laura P.Dowling fall (2015) studied, it is anticipated that a new Aldrete discharge scoring tool will be instituted as the discharge protocol for phase1PACU. Using a standardized tool provides consistency of care, reduces errors, promotes efficient use of resources, meets joint commission requirements, and meets ASPAN recommended standards. The use of the scoring tool should be taught as part of orientation to the unit.

Berrin Pazar, ayla yava (2013) The use of the EWSS and nursing guide, when physiological parameters are monitored by patients during their PACU stay had positive effects on outcomes and provided early recognition and treatment of the post -operative complications. The use of the EWSS and nursing guide are suggested to be also continued after the patient was transferred toward from PACU and the follow-up should be maintained in this manner up to at least 24 hours after the operation.

Peris A (2012) studied the purpose of MEWS in emergency abdominal surgery post- operative and concluded that the use of a simple and reproducible score system may help in reducing ICU admissions after emergency surgery.

Dr.Nicole M. Phillips DipAppSc (Nsg), -2011 studied there was general agreement amongst the studies that post-anesthetic Care unit discharge assessment should consider levels of pain, conscious state, and nausea and vomiting. Although vital signs were included in all the discharge assessment tools, there was variation in the specific vital signs included within tools, with blood pressure being the only vital sign consistently used. The value of including urine output, oral intake or psychomotor testing in assessing readiness for post-anesthetic care unit. Discharge was inconclusive and therefore requires further investigation.

Kyriacos et al., (2009) studied MEWS for postoperative monitoring and concluded that MEWS provides a reliable picture of clinical deterioration and appropriate intervention.

CHAPTER - III

METHODOLOGY:

The study was designed to determine the effectiveness of early warning scoring system for execution of nursing interventions among patients subjected to open abdominal surgeries in the PACU at KMCH, Coimbatore. This chapter deals with the methods adopted by the researcher such as research design, variables, setting of the study, population, sample, sample size, sample technique, criteria for sample selection, description of the tool, validity and reliability of the tool, pilot study, procedure for data collection, ethical consideration and statistical analysis.

RESEARCH DESIGN:

The research design adopted for the study was single group pretest posttest design.

VARIABLES UNDER THE STUDY:

a) Independent variable:

The independent variable in this study was modified early warning scoring system based on interventions.

b) Dependent variable:

The dependent variables in this study are post-operative complications.

SETTING OF THE STUDY:

This study was conducted in Kovai Medical Center Hospital, Operation Theater-II in PACU Coimbatore. It is a multi-specialty hospital with NABH accreditation, consisting of 800 beds with modern facilities and excellence in the health care delivery system. In Operation Theater - II monthly 20 numbers of open abdominal surgeries are performed. The patients will be kept for observation for 3-4 hours in the PACU.

During the observation in PACU the patients are having a high risk of developing many complications. Early & Prompt identification will save the life of the

patient. When the patient is hemodynamically stable, the patient will be shifted to post-operative surgical ward.

POPULATION OF THE STUDY:

The target population were patients in the age group of above 20years subjected to open abdominal surgery. The accessible population were patients posted for open abdominal surgery in Kovai Medical Center and Hospital, South India.

SAMPLE:

Patients admitted to KMCH for surgery, who met the inclusion criteria during the period of the study.

SAMPLE SIZE:

The sample size for the study was 25 patients.

SAMPLING TECHNIQUE:

Non probability purposive sampling technique was adopted for sample selection. Those who fulfilled the selection criteria and willing to participate were recruited for the study.

CRITERIA FOR SAMPLE SELECTION:

a) **Inclusion Criteria:**

Patients who are

- Aged above 20 of both male & females.
- The patients who underwent major open abdominal surgeries.

b) **Exclusion Criteria:**

- The patients who were critically ill.
- Re- exploration of open abdominal surgery.

DISCRIPTION OF THE TOOL:

Extensive review of literature, discussion and views of experts enhanced the development of the tool. They consisted of 4 sections.

Part I: Demographic variables such as age, sex, education, occupation, previous operations, presence of chronic diseases, type of anaesthesia.

Part II: Clinical variables such as oxygenation, heart rate, respiratory rate, blood pressure, skin color, urine output, protective reflex, wound drainage color, wound drainage amount, surgical bleeding, nausea and vomiting.

Part III: To determine the effectiveness of MEWS among patients subjected to open abdominal surgeries.

VALIDITY AND RELIABILITY OF THE TOOL;

All the contents were reviewed for face and content validity by medical and nursing experts and they were pilot tested to assess the usability and early detection and prevention of post -operative complications.

Content validity of the tool was established by experts comprising of experts from the field of nursing, anesthetics and surgeon. The researcher gave a copy of the tool and explained the purpose and objective of the study to them individually. The panel of content experts were asked to rate the tool that early detection and prevention of post - operative complications on implementation of modified early warning scoring system.

PILOT STUDY;

The pilot study was conducted in operation theatre-II of KMCH, Coimbatore.To ascertain the feasibility of the study. Formal permission was obtained before pilot study. Pilot study has been conducted with 7 patients in the study group. The collected data were analyzed. The analysis of the pilot study revealed that it was feasible and practicable to conduct the main study. The reliability of the tool was also established in the pilot study. And the same was approved and the investigator was permitted to proceed with the main study.

PROCEDURE FOR DATA COLLECTION;

On the first day of the holding area, while subjects were comfortable (or) when the physician and nurse completed the routine procedure, patients who met the inclusion criteria were approached consecutively by the researcher and were explained the purposes and procedures in detail.

The patients were assured that they were free to withdraw during the study without any compromise in subsequent treatment.

This study, if the patient's MEWS score was >15, a 10 minute follow-up are performed. If the MEWS score was <15 , 5 minutes follow-up were performed; If the score did not change, then the follow-up were performed 5 minutes once and the emergency team calls to evaluate the patient.

Data collection was conducted by using the demographic variables and MEWS; the patients were clearly explained about the modified early warning scoring system in pre - operatively.

ETHICAL CONSIDERATION;

Ethical clearance was obtained from the institutional ethical committee to conduct the study. Permission was obtained from the head of the department in the OT and incharges of the operation theatre for conducting the main study.

STATISTICAL ANALYSIS;

The data were analyzed on the basis of objectives and hypothesis. Descriptive and inferential statistics were used for analyzing the data. Data were analyzed using the statistical package for the social sciences (SPSS version 22). The plan for data analysis follows:

Table 1 Schematic representation of the data analysis plan.

METHODS	TYPES	PURPOSE
Descriptive Statistics	Frequency, percentage, mean and standard deviation	Assessment of the study variables, prevent the complications
Inferential Statistics	RM ANOVA	The difference in the MEWS at various time periods in post anaesthesia period.

CHAPTER - IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of data collected from the subjects to assess the early warning scoring system and post-operative complications from the post anaesthesia care unit. The findings are as follows:

SECTION A : Description of demographic variables

SECTION B : Description of clinical Characteristics

SECTION C : Distribution of subjects according to demographic variables

SECTION D : Distribution of subjects according to clinical characteristics

SECTION E : Determine the effectiveness of MEWS among patients subjected to open abdominal surgeries.

SECTION – A

Table 2. DESCRIPTION OF DEMOGRAPHIC VARIABLES

S.No	Demographic Variables	Frequency (f)	Percent (%)
1	Age in years		
	20-40 years	6	24
	41-60 years	15	60
	61-80 years	4	16
2	Gender		
	Male	13	52
	Female	12	48
3	Marital Status		
	Unmarried	3	12
	Married	22	88
4	Education		
	Primary	1	4
	Secondary	8	32
	Degree	16	64
5	Occupation		
	Agriculture	3	12
	Coolie	4	16
	Profession	11	44
	Home maker	7	28
6	Previous Operation		
	Yes	21	84
	No	4	16
7	Presence of Chronic Diseases		
	DM/HT	8	32
	Others	5	20
	None	12	48
8	Type of Anaesthesia		
	GA	21	84
	RA	4	16

Table 2 presents the frequency and percentage distribution of demographic variables among patients in the PACU. 6 (24%) of them were in the age group of 20 - 40 years, 15 (60%) belongs to 41 - 60 years of age group, 4 (16%) were between 61-80 years of age group. 13 (52%) were male, 12 (48%) were female. 3 (12%) were unmarried, 22 (88%) were married, 1 (4%) of the subjects had primary education, 8

(32%) were having secondary education, 16 (64%) were having degree education. Based on occupation 3 (12%) were agriculture, 4 (14 %) were coolie, 11 (44 %) were professional, 7 (28 %) where home maker. 21 (84%) had previous operation, 4 (16%) had no previous operation. 8 (32%) had presence of chronic disease like DM/HT, 5 (20%) had other chronic disease, 12 (48%) did not have any chronic disease. 21 (86%) were undergoing surgery under GA, 4 (16%) had RA .

All above table describe the distribution of demographic variables of the subjects.

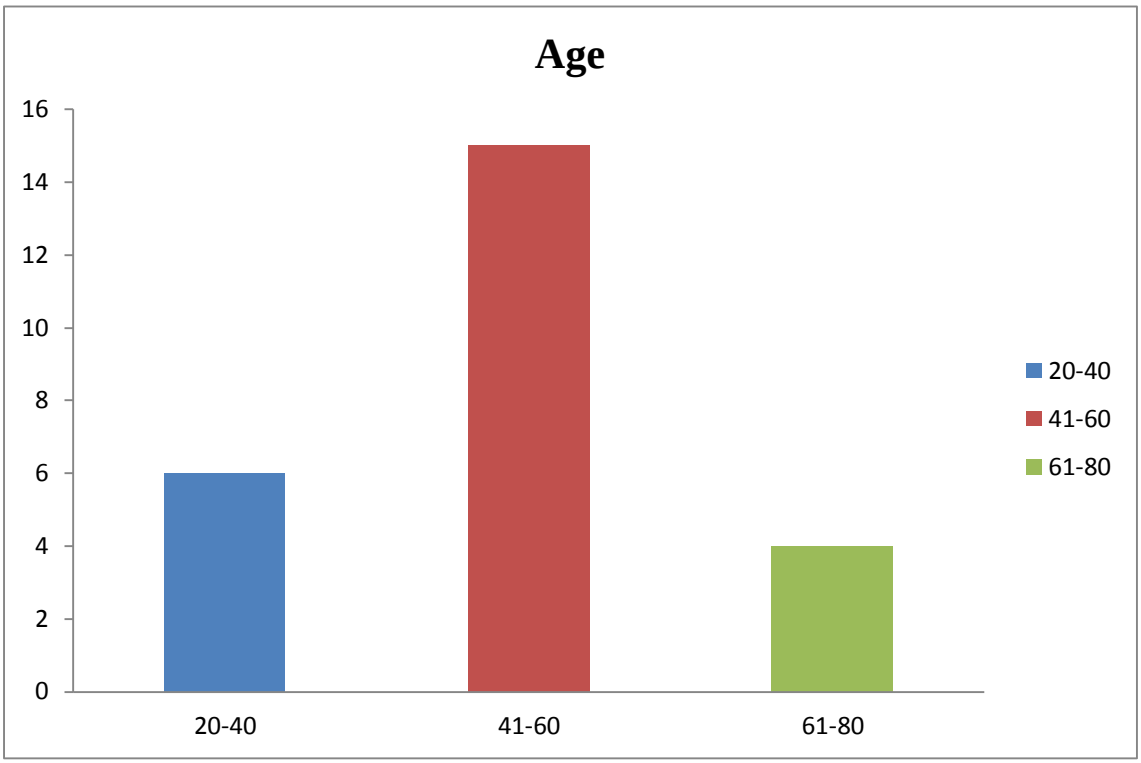

Figure 2: Distribution of subjects based on Age

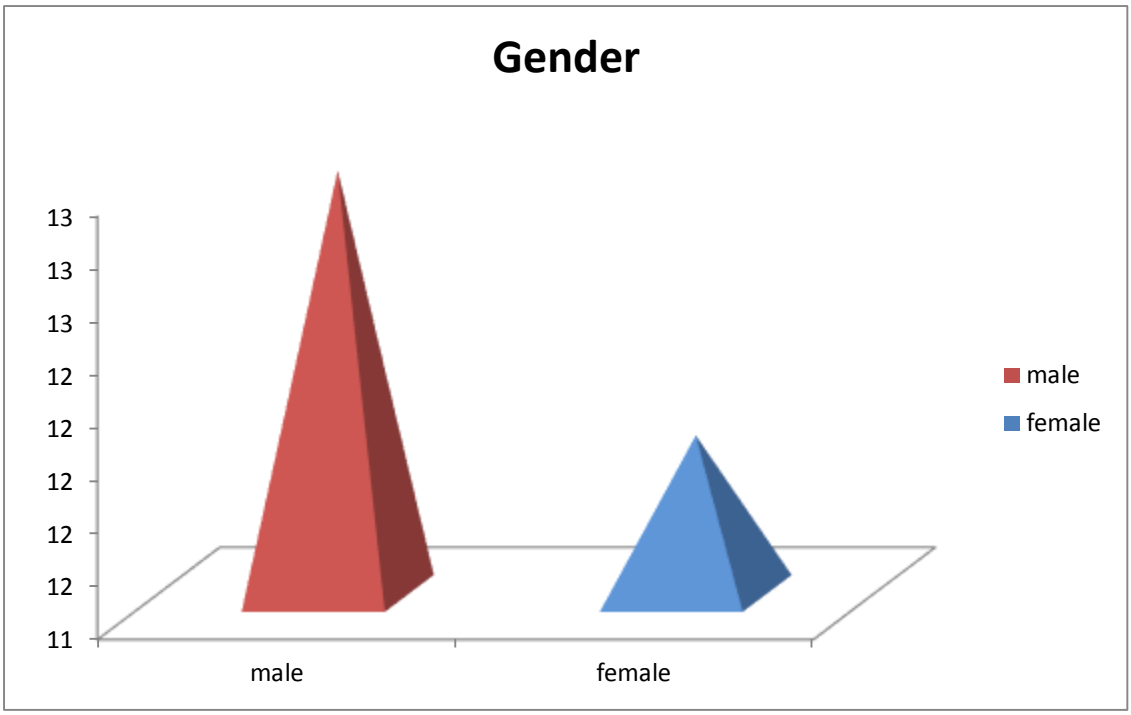

Figure 3: Distribution of subjects based on Gender

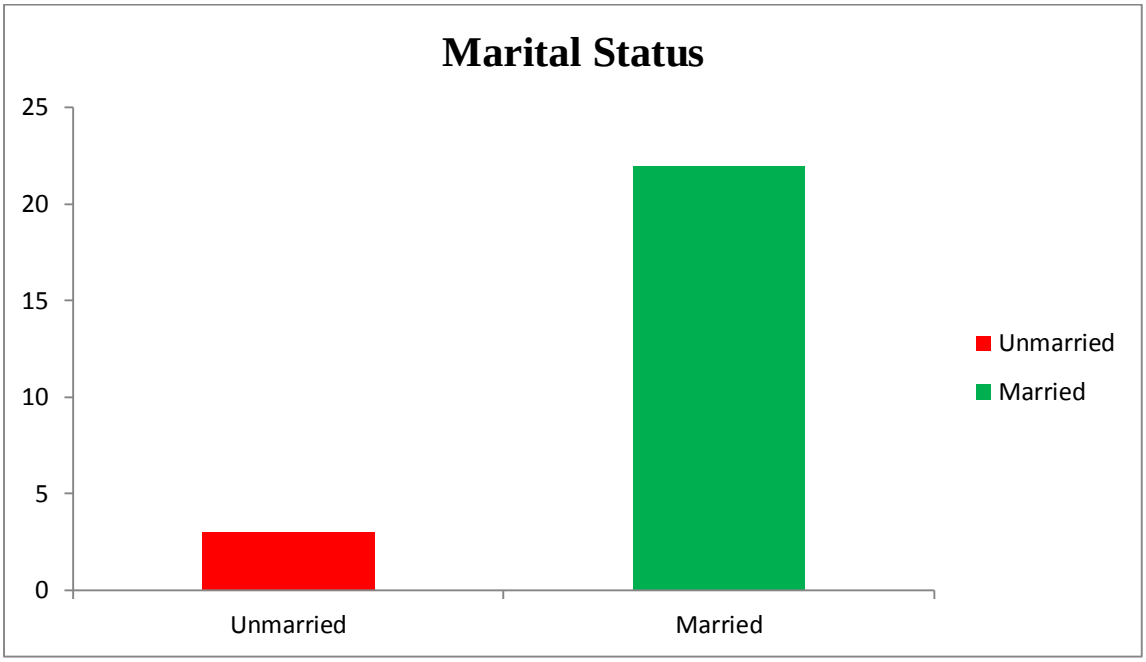

Figure 4: Distribution of subjects based on Marital Status

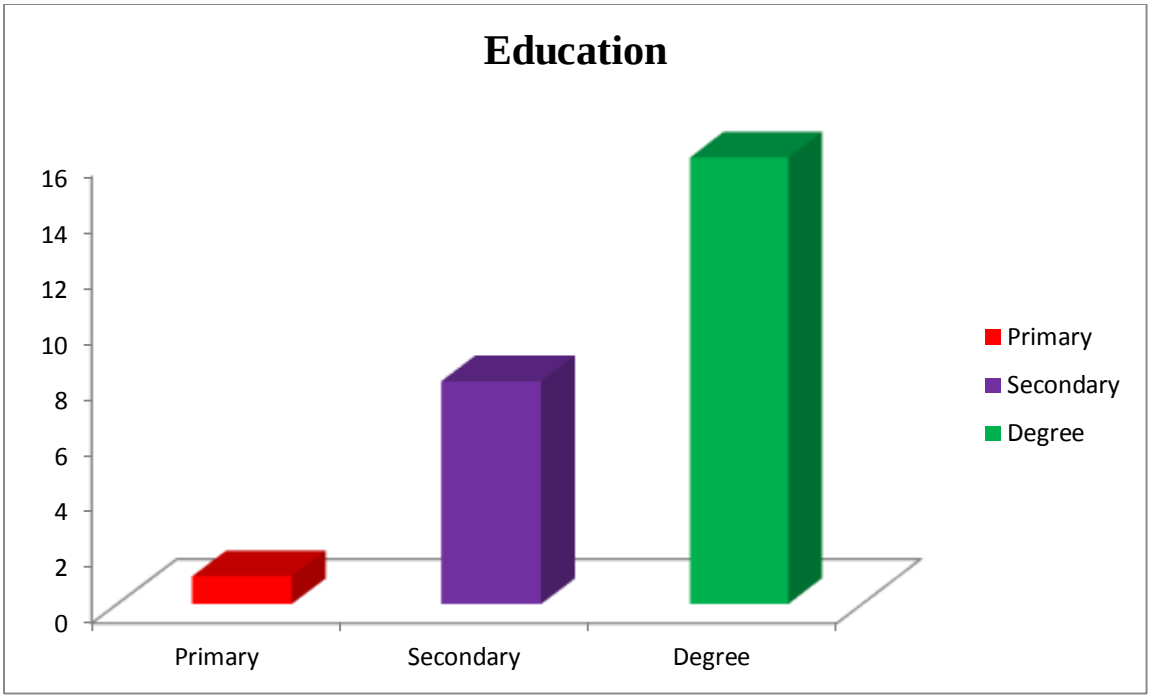

Figure 5: Distribution of subjects based on Education

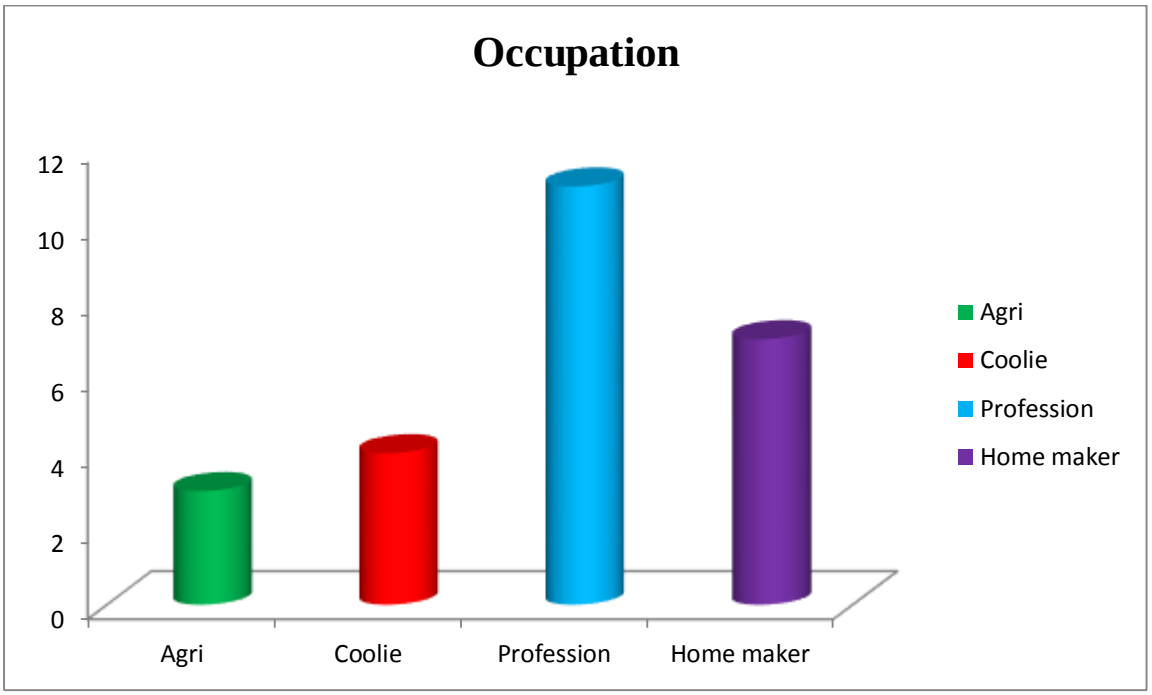

Figure 6: Distribution of subjects based on Occupation

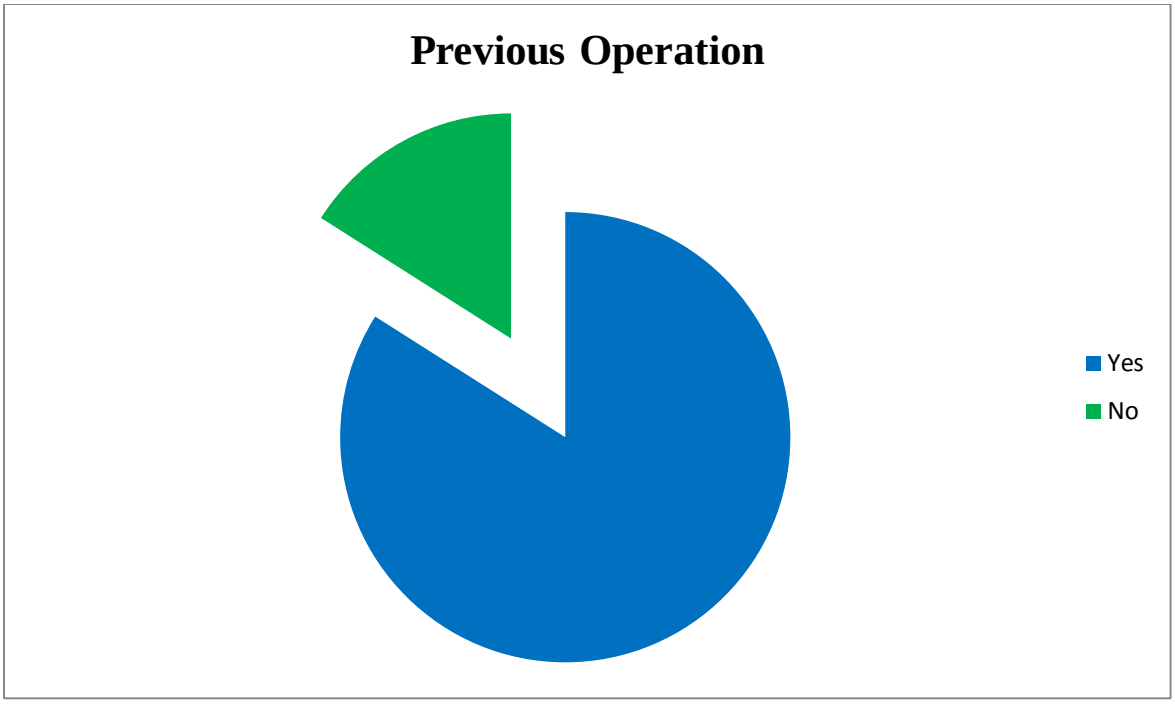

Figure 7: Distribution of subjects based on Previous Operations

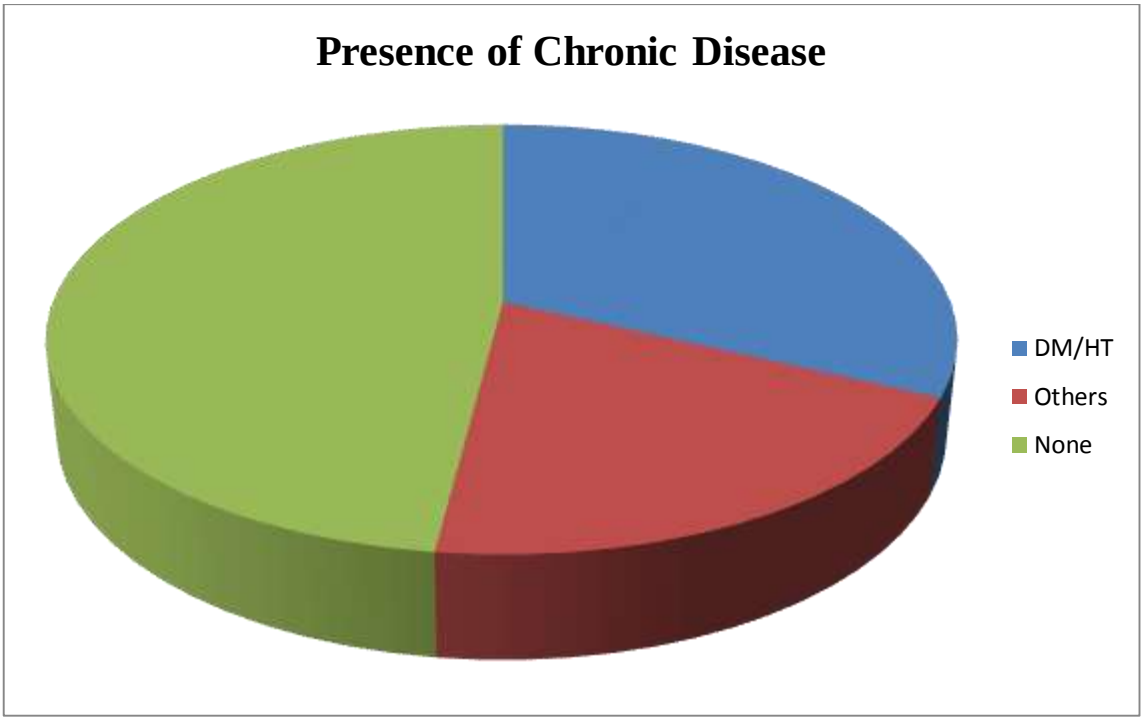

Figure 8: Distribution of subjects based on Presence of Chronic Disease

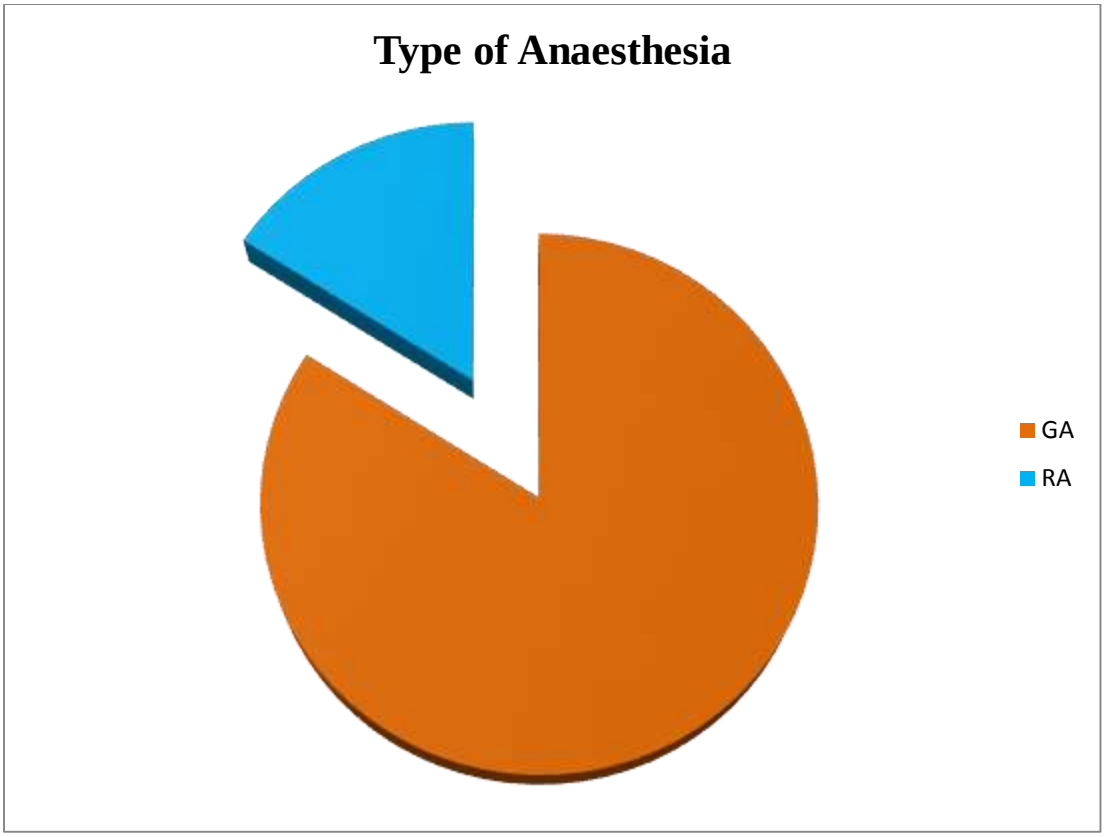

Figure 9: Distribution of subjects based on Type of Anaesthesia

SECTION – B

Table 3. DISTRIBUTION OF CLINICAL VARIABLES

S.NO	CLINICAL PARAMETER	MEWS	SCHEDULE	FREQUENCY (F)	PERCENT (%)
1	Oxygenation	1	SPO2>90% on Oxygen	24	96
		2	SPO2>92% on room air	1	4
2	Pattern of Respiration	1	Dyspnea or Shallow breathing	11	44
		2	Can deep breathe & Cough well	14	56
3	Heart Rate	0	111-129 b/m	1	4
		1	101-110 b/m	14	56
		2	50-100 b/m	10	40
4	Blood Pressure	1	BP +/-20-50mmHg of pre-op level	12	48
		2	BP +/-20mmHg of pre-op level	13	52
5	Consciousness	1	Arousable on Calling	12	48
		2	Fully awake	13	52
6	Pain Score	1	Moderate (4-6)	20	80
		2	Minimal (0-3)	5	20
7	Temperature	1	98.6°F - 99.5°F	9	36
		2	95.0°F - 98.6°F	16	64
8	Urine Output	1	20 - 30 ml/HR	15	60
		2	>30 ml/HR	10	40

9	Skin color	1	Pale, "dusky" or "blotchy", discoloration, as well as jaundice	4	16
		2	Pink	21	84
10	Presence of Protective Reflex	1	Diminished Sluggish	4	16
		2	Gag reflex is Present	21	84
11	Activity	0	Not able to move any extremity	1	4
		2	Able to move 4 extremities	24	96
12	Wound Drainage Color	1	Sanguineous	10	40
		2	Serous	15	60
13	Wound Drainage Amount	1	Moderate	18	72
		2	Minimal	7	28
14	Surgical Bleeding	1	Moderate	1	4
		2	None (or) Minimal	21	96
15	Nausea and Vomiting	1	Moderate and treated with IV medications	24	96
		2	None	1	4

Table 3 presents the frequency and percentage distribution of clinical variables among patients in the PACU. 24 (96%) was spo2 >90% of oxygen, 1 (4%) was spo2 >92% on room air. 11 (44%) had dyspnea and shallow breathing, 14 (56%) can deep breathe and cough well. 1 (4%) had a heart rate between 111-129 b/m, 14 (56%) had a heart rate between 101-110 b/m, 10 (40%) had a heart rate between 50-100 b/m. 12 (48%) had BP +/- 20-50mmHg of pre-operative level, 13 (52%) had BP +/- 20 mm Hg of pre-operative level. 12 (48%) were arousable on calling, 13 (52%) were fully awake. 20 (80%) had moderate pain (4-6), 5 (20%) had minimal pain (0-3). 9 (36%) had a temperature between 98.6F- 99.5F, 26 (64%) had a temperature between 95.0F- 98.6F. 15 (60%) had a urine output of 20-30 ml/HR, 10 (40%) had urine output of more than 30 ml/HR. 4 (16%) of subjects was skin color is pale, as well as present with jaundice, 21 (84%) of subject's skin color was normal pink. 4 (16%) of subjects reflex is

diminished/ sluggish, 21 (84%)of subjects gag reflex was normal. 1 (4%) had not able to move any extremity, 24 (96%) were able to move 4 extremities. 10 (40%) had sanguineous wound drainage, 15 (60%) had serous wound drainage. 18 (72%) had moderate wound drainage amount 7 (28%) had minimal wound drainage amount. 15 (60%) had moderate surgical bleeding, 10 (40)% had none (or) minimal surgical bleeding. 24 (86%) had moderate nausea and vomiting treated with IV medications, 1 (4%) had no vomiting.

All above table describe the distribution of Clinical variables of the subjects.

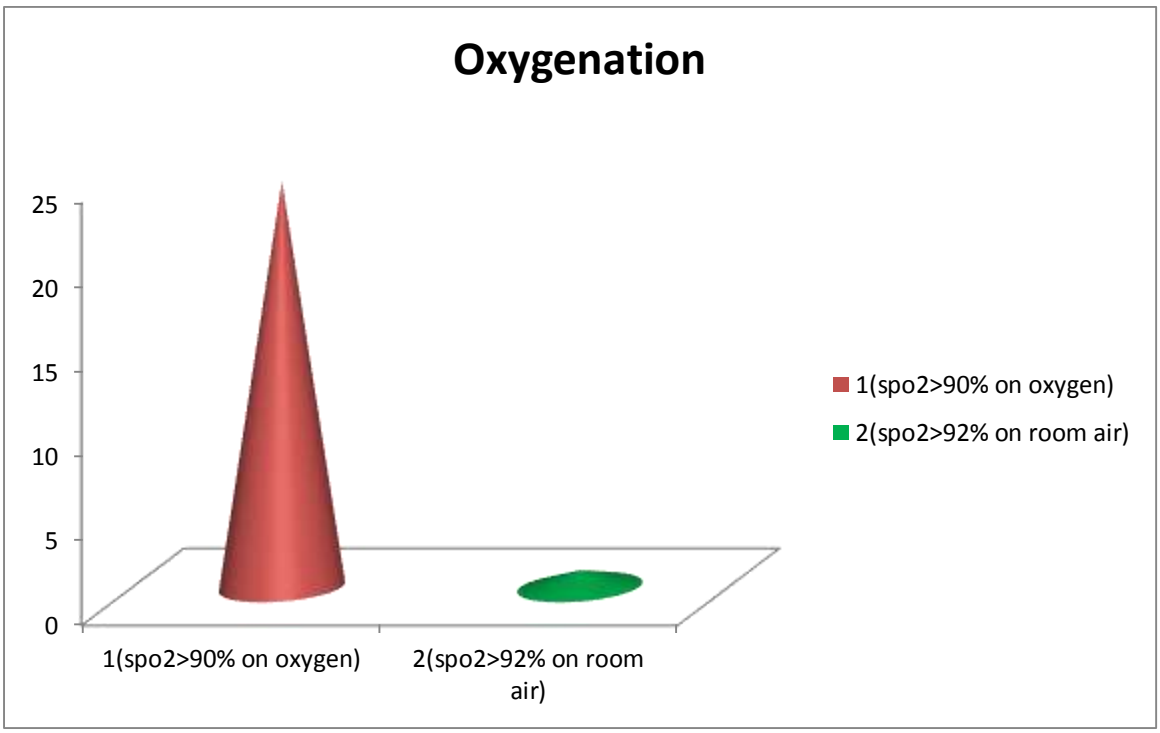

Figure 10: Distribution of subjects based on Oxygenation

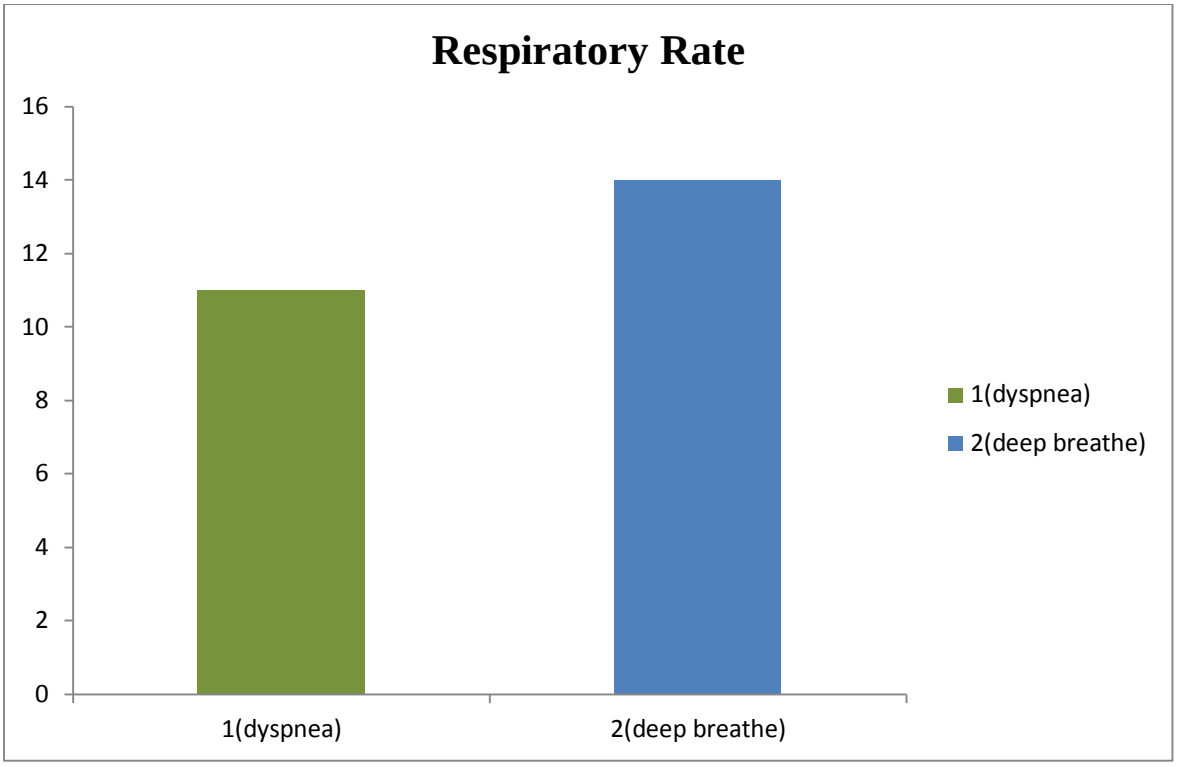

Figure 11: Distribution of subjects based on Respiratory Rate

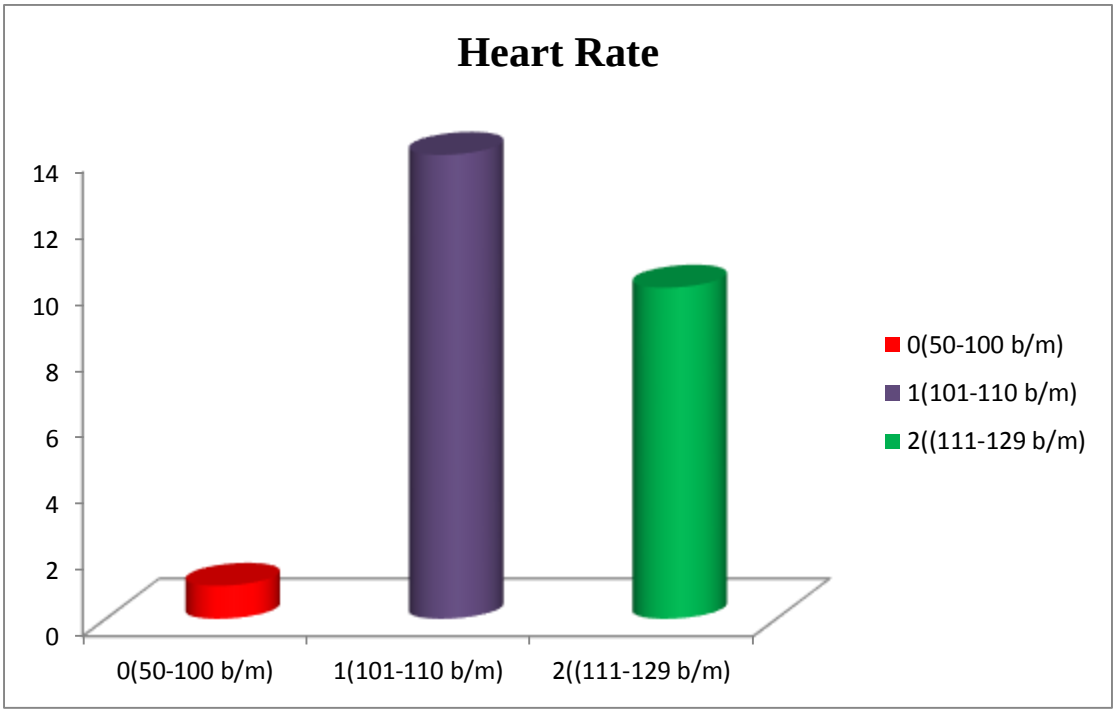

Figure 12: Distribution of subjects based on Heart Rate

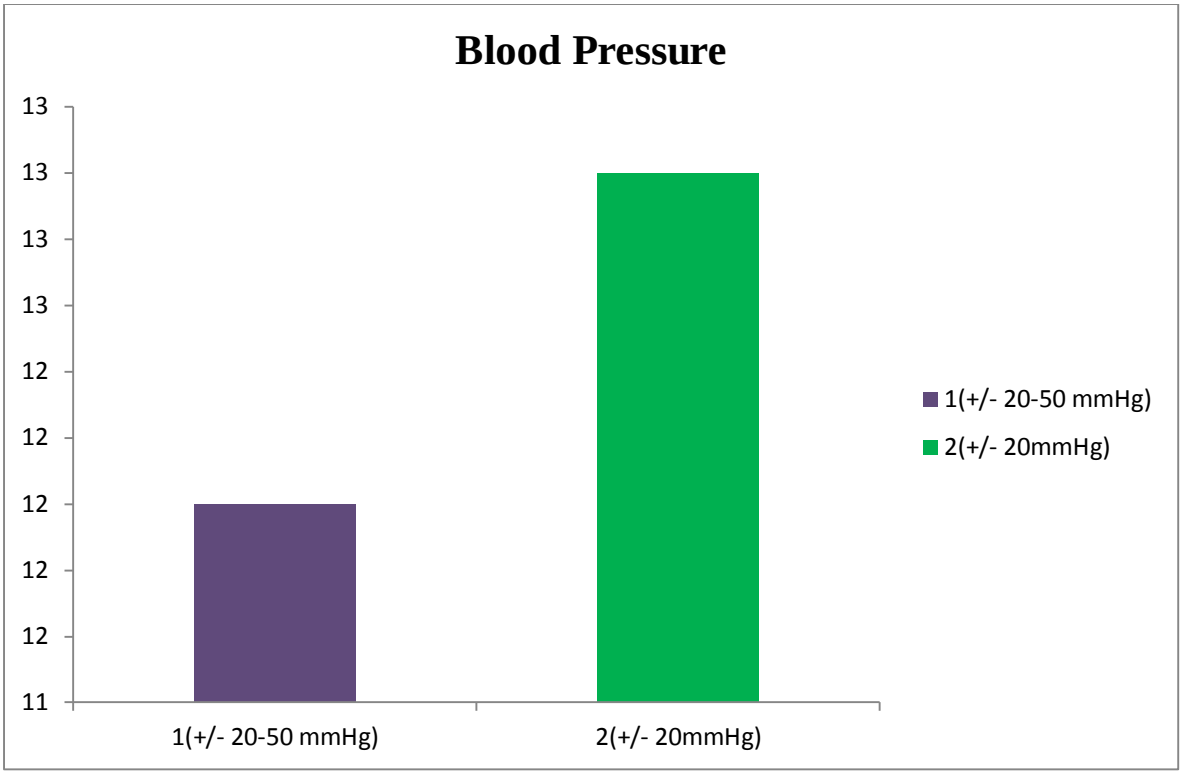

Figure 13: Distribution of subjects based on Blood Pressure

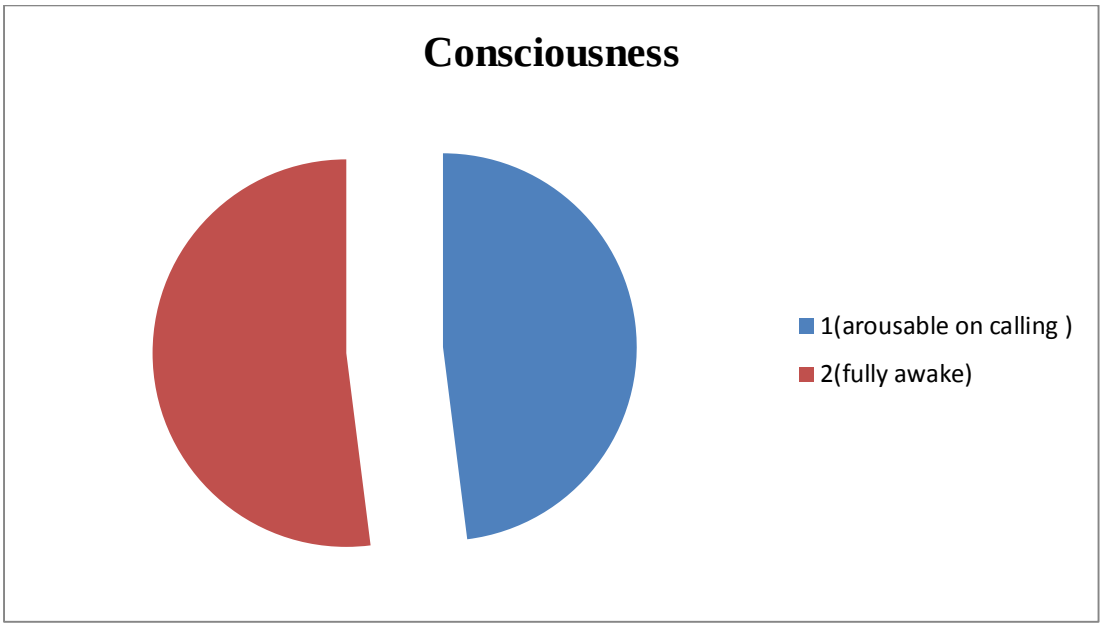

Figure 14: Distribution of subjects based on Consciousnes

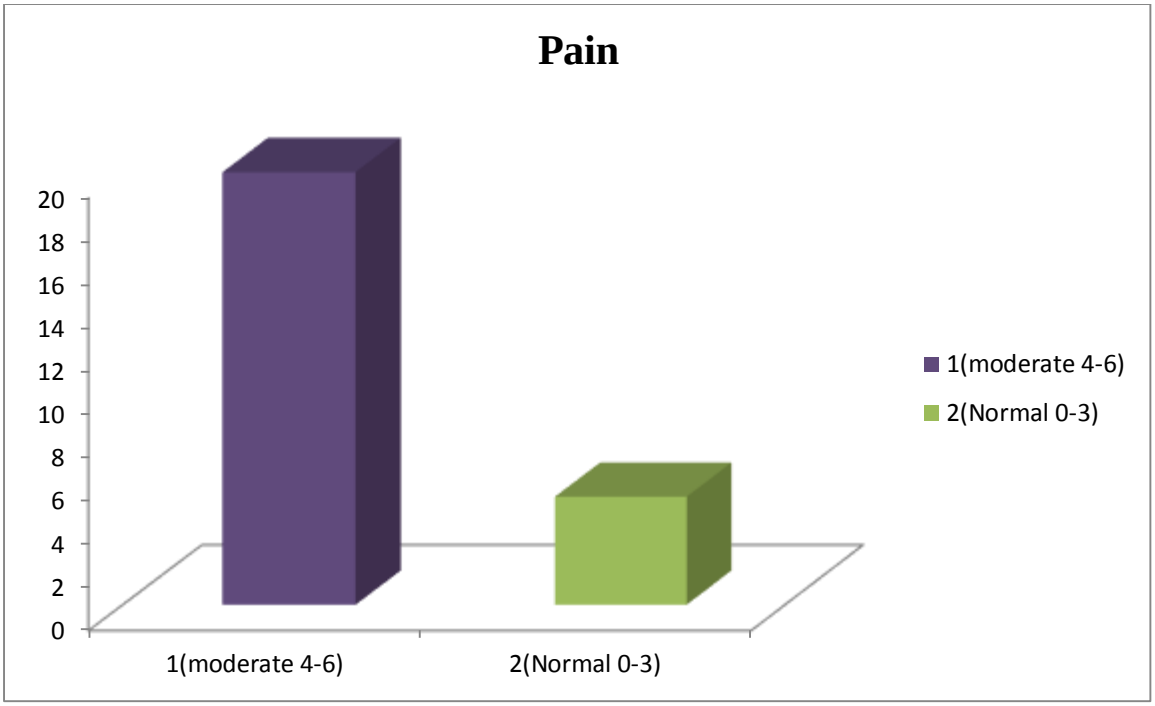

Figure 15: Distribution of subjects based on Pain

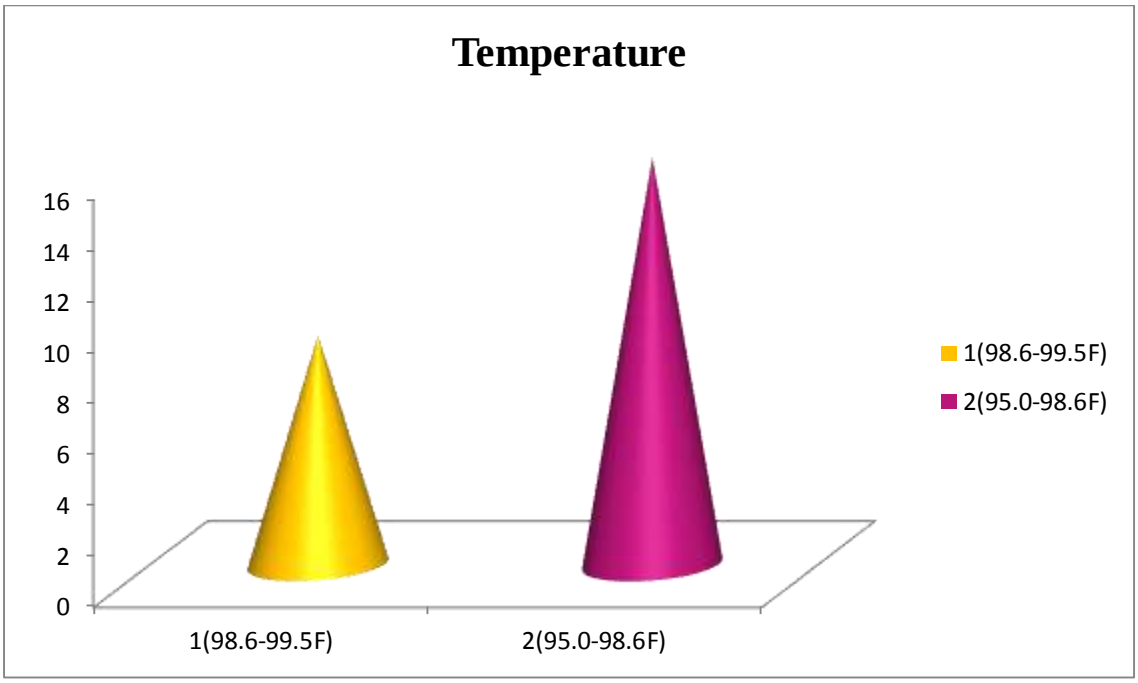

Figure 16: Distribution of subjects based on Temperature

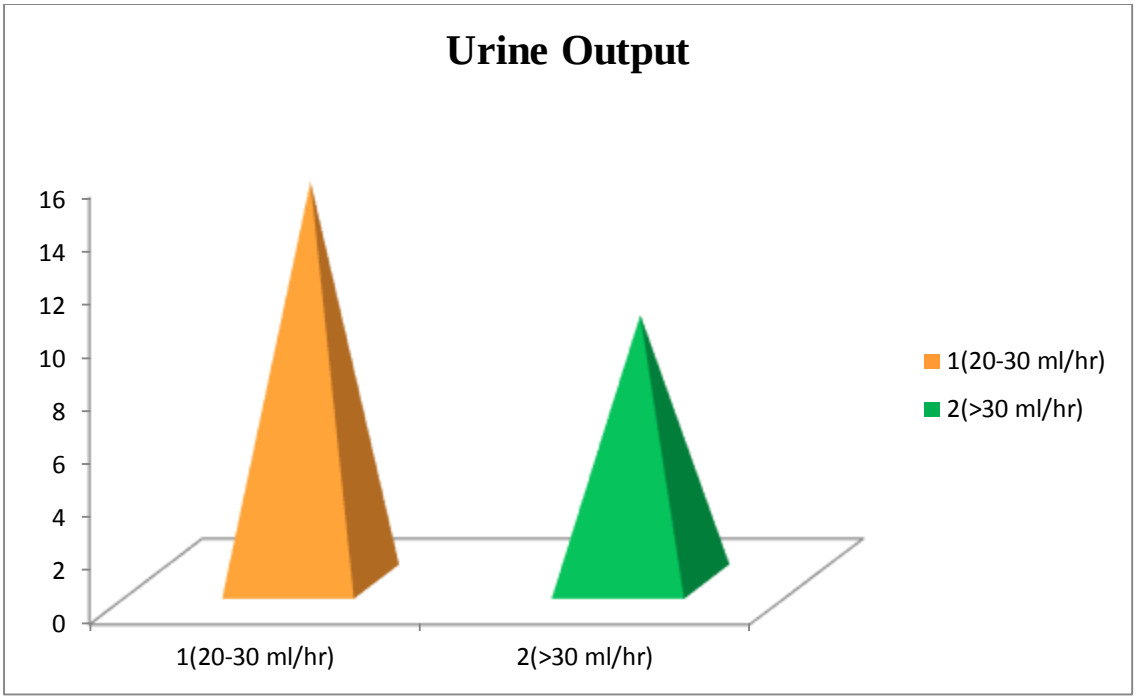

Figure 17: Distribution of subjects based on Urine Output

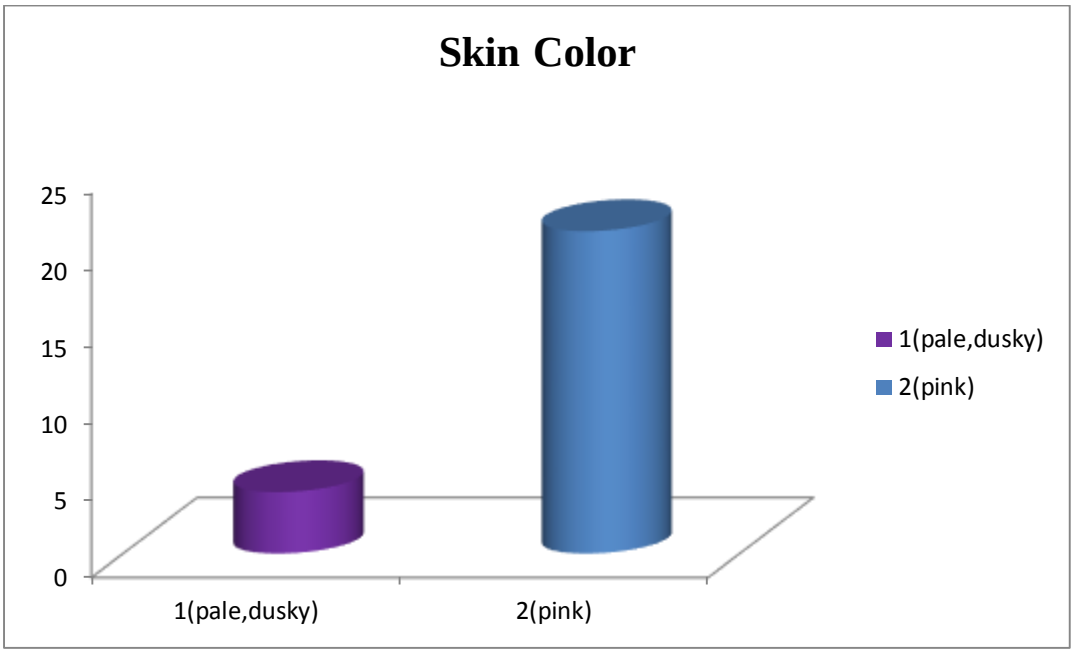

Figure 18: Distribution of subjects based on Skin Color

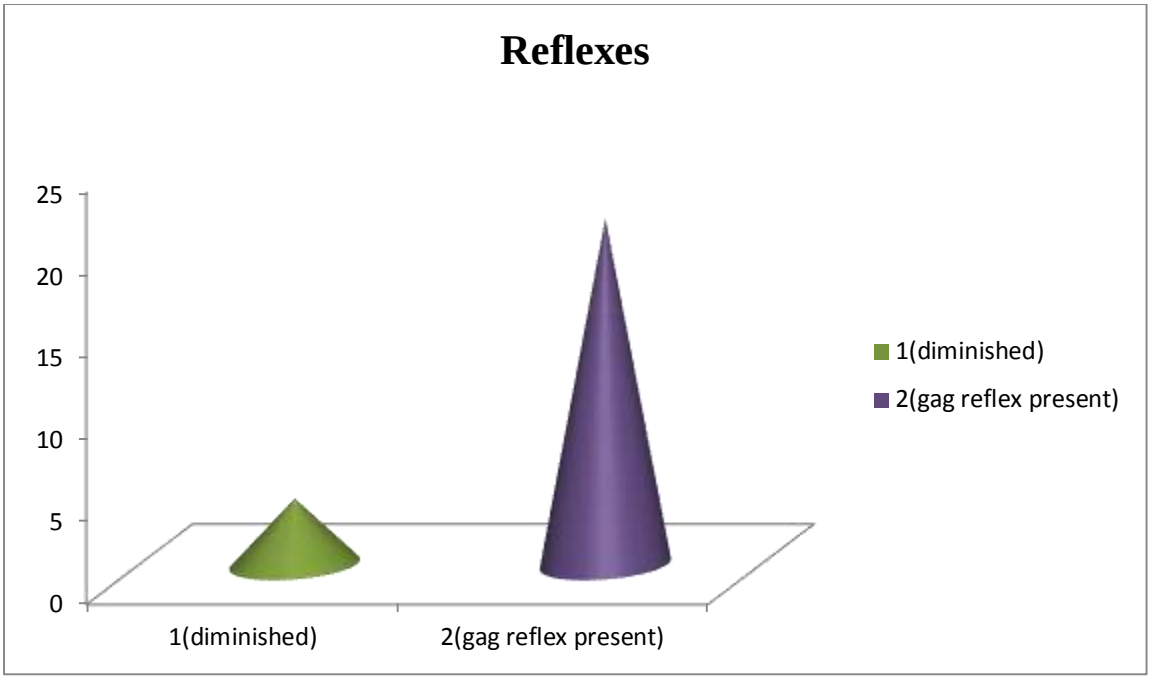

Figure 18: Distribution of subjects based on Presence of Protective Reflex

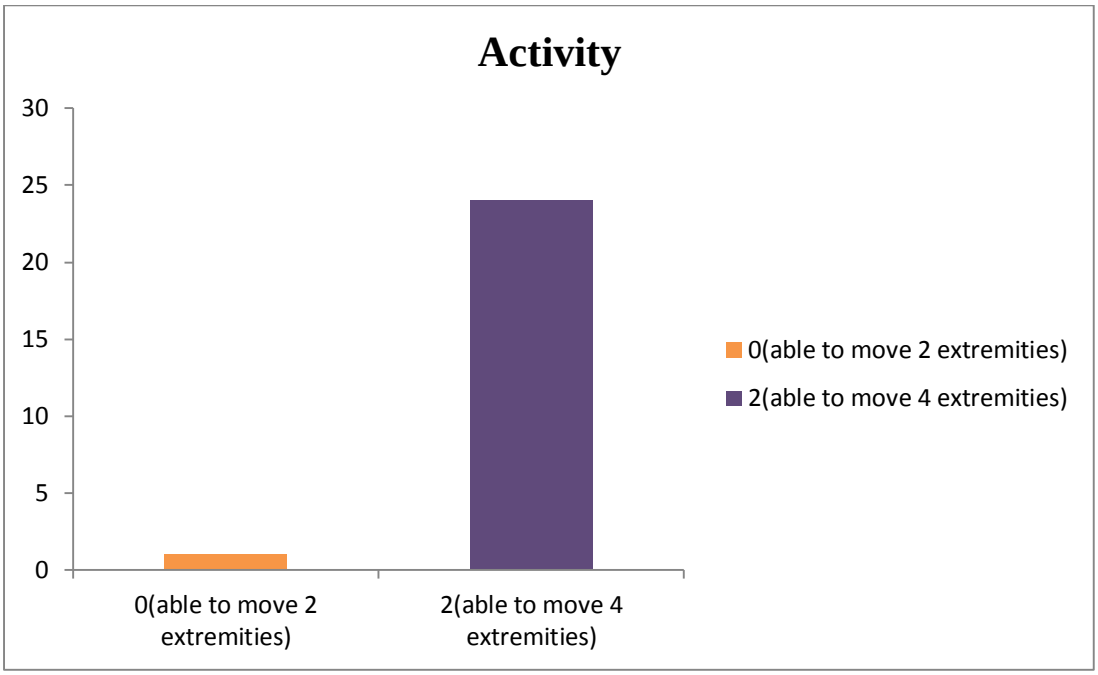

Figure 19: Distribution of subjects based on Activity

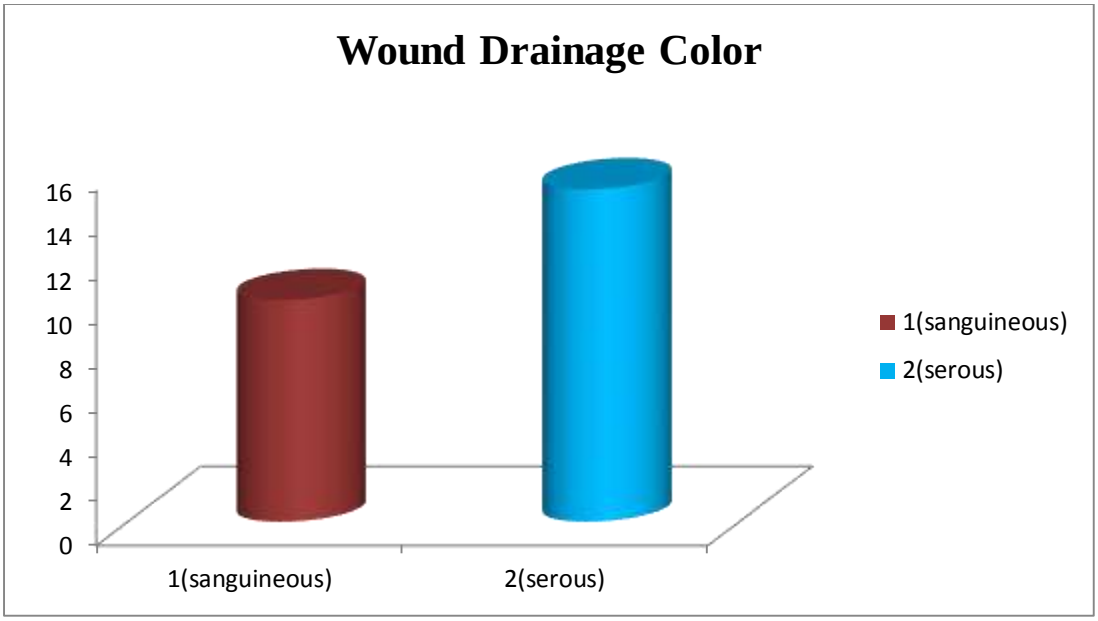

Figure 20: Distribution of subjects based on Wound Drainage Color

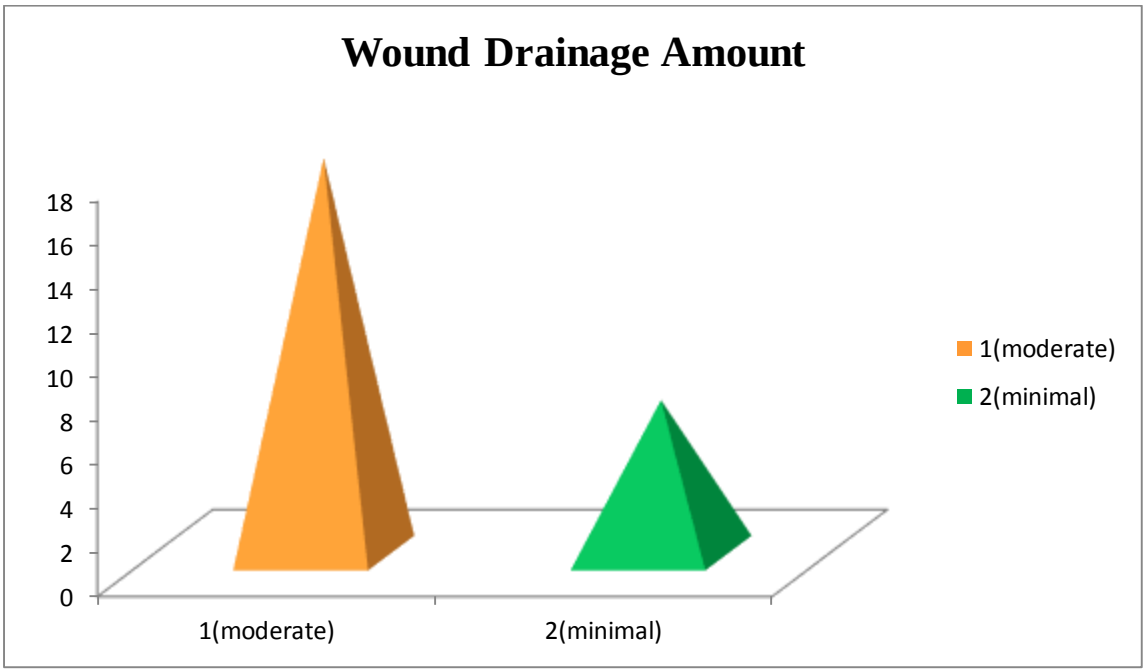

Figure 21: Distribution of subjects based on Wound Drainage Amount

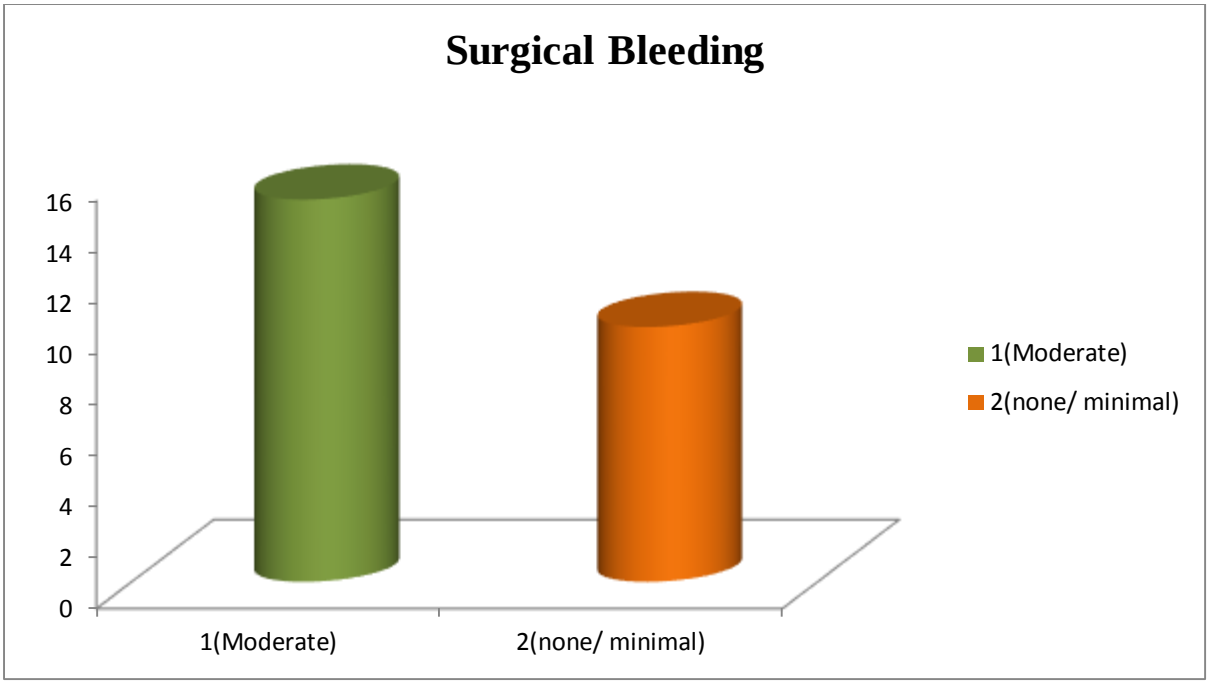

Figure 22: Distribution of subjects based on Surgical Bleeding

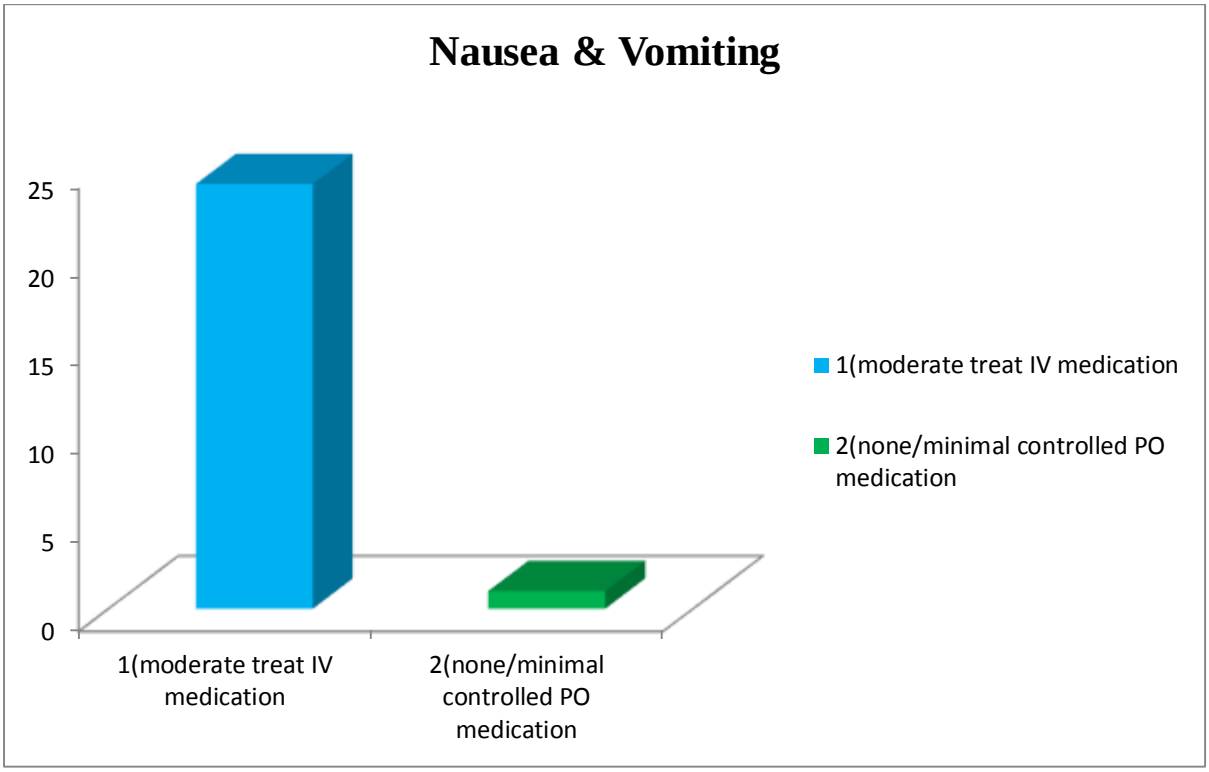

Figure 23: Distribution of subjects based on Nausea and Vomiting

SECTION – C

DISTRIBUTION OF SUBJECTS ACCORDING TO DEMOGRAPHIC CHARACTERISTICS

VARIABLES	MEAN	STANDARD DEVIATION
Age	1.92	0.64031
Gender	1.48	0.5099
Marital Status	1.88	0.33166
Education	3.6	0.57735
Occupation	2.88	0.97125
Previous Operations	1.16	0.37417
Presence of Chronic Diseases	2.16	0.89815
Type of Anaesthesia	1.16	0.37417

Table 4 distribution of subjects according to demographic characteristics the Age (mean=1.92 SD=0.64, Gender (mean=1.48, SD= 0.50), Marital status (mean= 1.88 SD-0.33), Education (mean=3.6 SD=0.57), Occupation (mean= 2.88, SD= 0.97), Previous operations (mean=1.16 SD=0.37), Presence of chronic diseases (mean= 2.16 SD= 0.89), Type of anaesthesia (mean=1.16 SD=0.37).

SECTION - D:

DISTRIBUTION OF SUBJECTS ACCORDING TO CLINICAL VARIABLES

VARIABLES	MEAN	STANDARD DEVIATION
Oxygen	1.04	0.200
RR	1.56	0.506
HR	1.36	0.568
BP	1.52	0.509
Consciousness	1.52	0.509
Pain	1.20	0.408
Temperature	1.64	0.489
Urine Output	1.40	0.500
Skin Color	1.84	0.374
Protective Reflex	1.84	0.374
Activity	1.92	0.400
Wound Drainage Color	1.60	0.500
Wound Drainage Amount	1.28	0.458
Surgical Bleeding	1.40	0.500
Nausea and Vomiting	1.04	0.200

Table 5 shows the distribution of subjects based on clinical characteristics such as Oxygen (mean=1.04 SD=0.20), Respiratory rate (mean=1.56 SD=0.50), Heart rate (mean=1.36 SD=0.56), Blood pressure (mean= 1.52 SD=0.50), Consciousness (mean=1.52 SD=0.50), Pain (mean=1.20 SD=0.40), Temperature (mean=1.64 SD=0.48), Urine output (mean=1.40 SD=0.50), Skin color (mean=1.84 SD=0.37), Protective reflex (mean=1.84 SD=0.37), Activity (mean=1.92 SD=0.4), Wound drainage color (mean=1.60 SD=0.5), Wound drainage amount (mean=1.28 SD=0.45), Surgical Bleeding (mean=1.4 SD=0.5), Nausea and Vomiting (mean=1.04 SD=0.2).

SECTION - E

Determine the effectiveness of MEWS among patients subjected to open abdominal surgeries.

Table 6 repeated measures ANOVA of oxygenation at various time periods in the PACU.

N=25

Time (Periods)	Mean	Std. Deviation	F Value
Ox1 (arrival time)	1.12	.43970	27.56*
Ox 2 (30 mins)	1.16	.37417	
Ox 3 (1 hr)	1.6	.50000	
Ox 4 (1 1/2 hrs)	1.96	.20000	
Ox 5 (2 hrs)	2	0.00000	

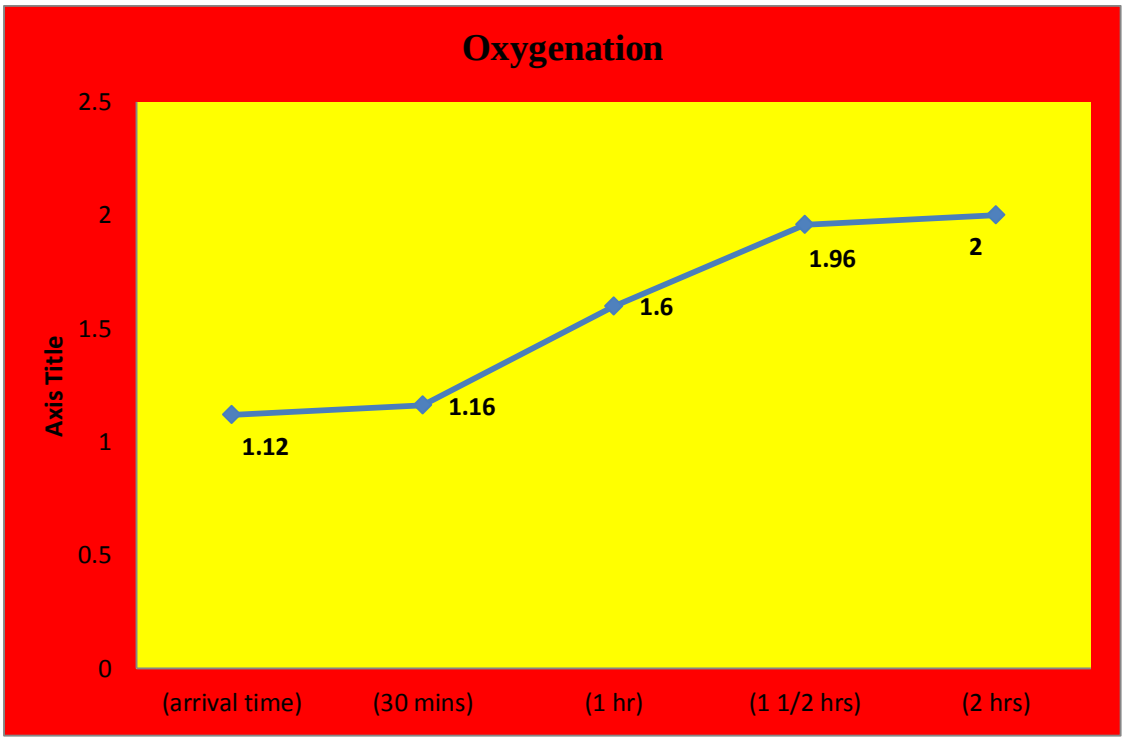

Figure 24 depicts the changes in oxygenation of the participants. It could be noted that by 2 hours Post anaesthetic the oxygenation was good.

Table 7 Repeated measure ANOVA Trend scores of pattern of respiration at various time periods in the PACU.

N=25

Time (Periods)	Mean	Std. Deviation	F Value
RR1(arrival time)	1.96	.20000	1.0*
RR 2 (30 mins)	2	0.00000	
RR 3 (1 hr)	1.96	.20000	
RR 4 (1 1/2 hrs)	1.96	.20000	
RR 5 (2 hrs)	2	0.00000	

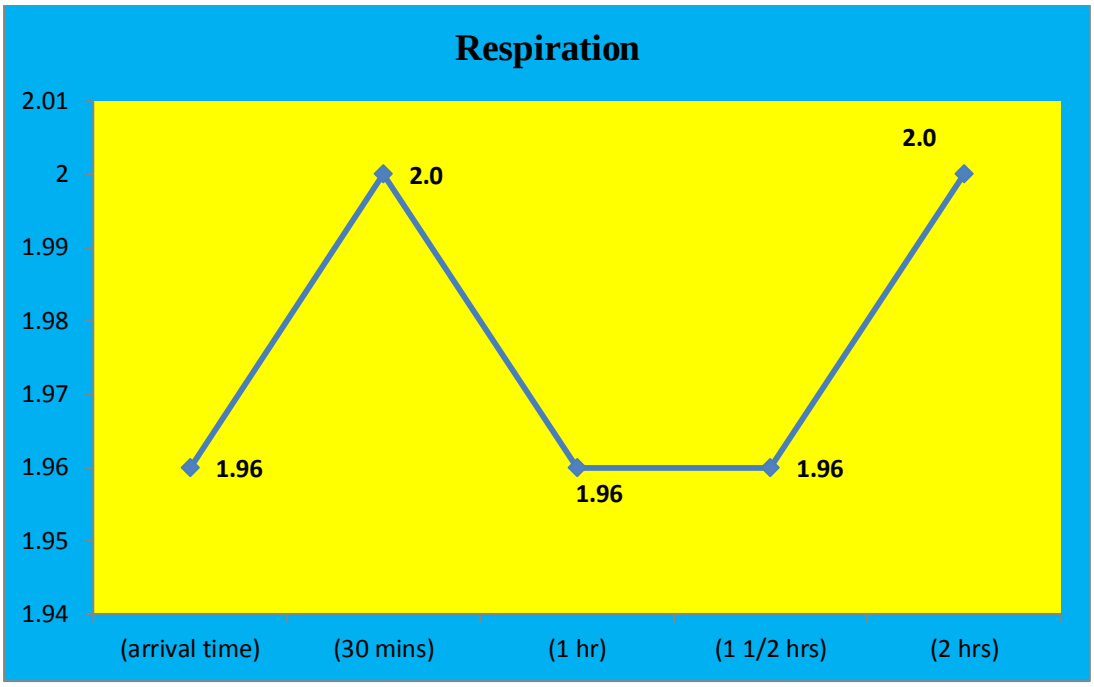

Figure 25 depicts the changes in trend scores of a pattern of respiration of the participants. It could be noted that by 30 minutes and 2 hours Post anaesthesia the pattern of respiration was good.

Table 8 Repeated measure ANOVA of heart rate at various time periods in the PACU.

N=25

Time (Periods)	**Mean**	**Std. Deviation**	**F Value**
HR 1 (arrival time)	1.68	.55678	2.28*
HR 2 (30 mins)	1.64	.56862	
HR 3 (1 hr)	1.72	.54160	
HR 4 (1 1/2 hrs)	1.88	.33166	
HR 5 (2 hrs)	2.00	0.00000	

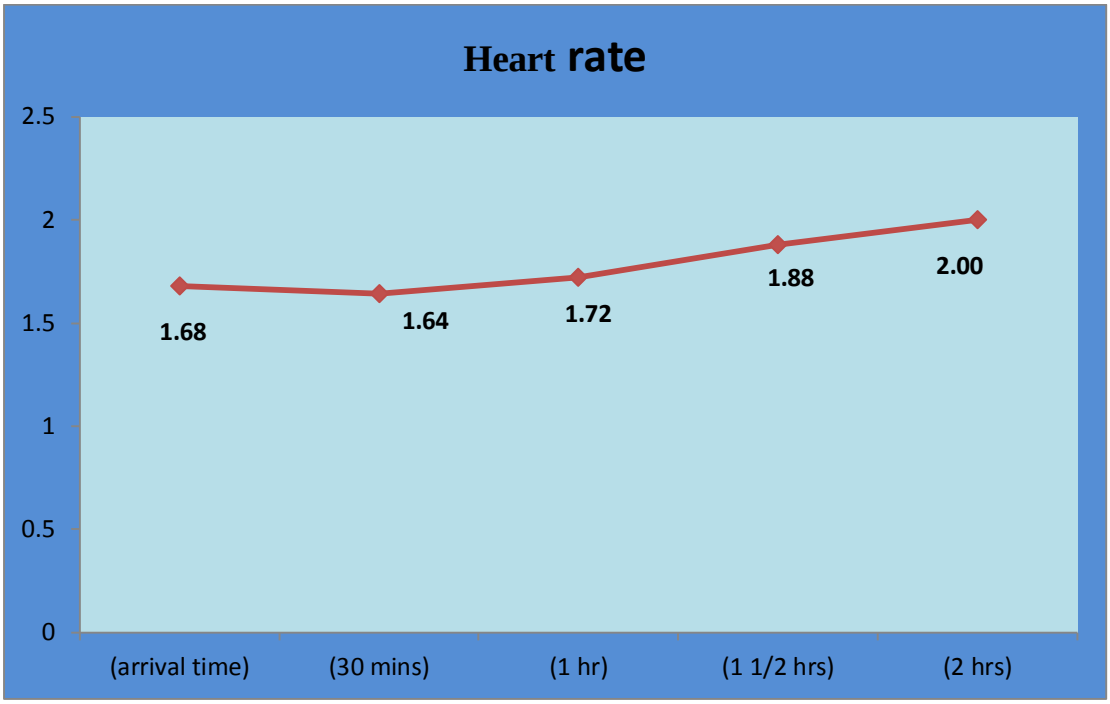

Figure 26 depicts the changes in heart rate in the participants. It could be noted that by 2 hours Post anaesthetic the heart rate was good

Table 9 Repeated measures ANOVA of blood pressure at various time periods in PACU.

N=25

Time (Periods)	Mean	Std. Deviation	F Value
Bp1 (arrival time)	1.64	0.4899	3.53*
Bp2 (30mins)	1.64	0.4899	
Bp3 (1 hr)	1.68	0.4761	
Bp4 (1 1/2 hrs)	1.88	0.33166	
Bp5 (2 hrs)	2	0	

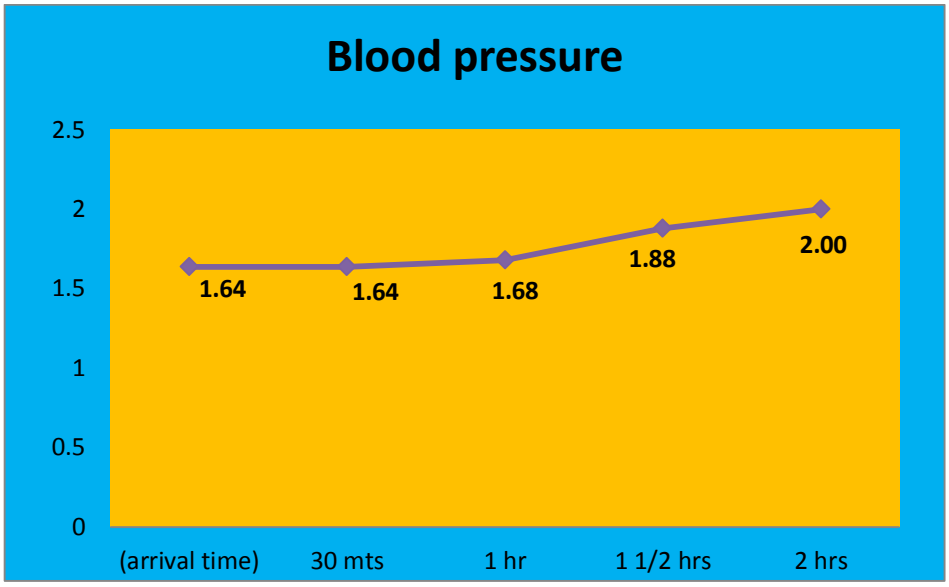

Figure 27 depicts the changes in blood pressure in the participants. It could be noted that by 2 hours Post anaesthetic the blood pressure was good.

Table 10 Repeated measure ANOVA of consciousness at various time periods in the PACU.

N=25

Time (Periods)	Mean	Std. Deviation	F Value
Cs1 (arrival time)	1.6	0.5	4.88*
Cs 2(30 mins)	1.64	0.4899	
Cs 3 (1 hr)	1.88	0.33166	
Cs 4(1 1/2 hrs)	2	0	
Cs 5(2 hrs)	2	0	

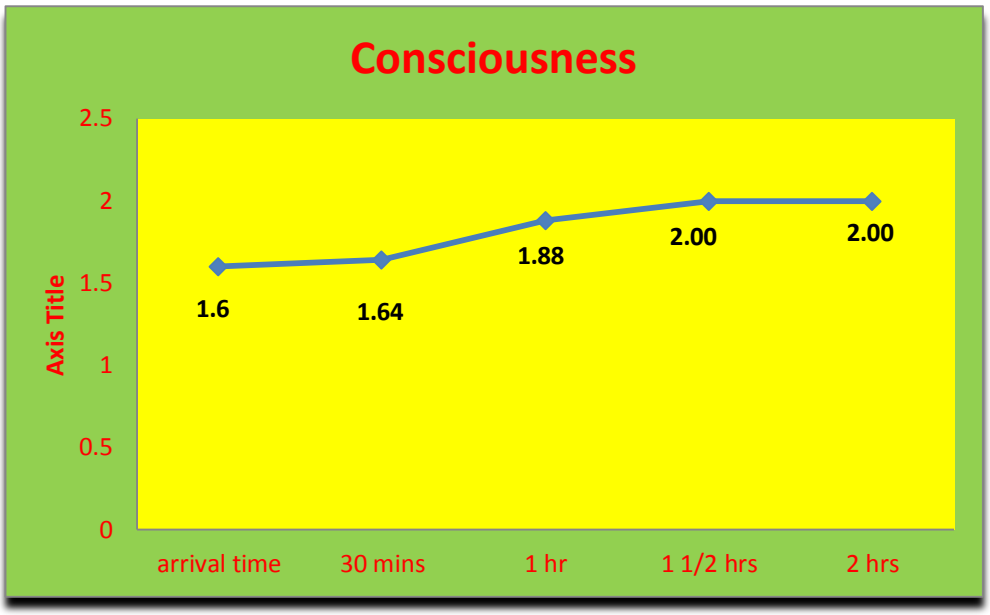

Figure 28 depicts the changes in consciousness of the participants. It could be noted that by 1½ hours and 2 hours, post anaesthetic the consciousness was good.

Table 11 Repeated measure ANOVA of pain at various time periods in the PACU.

Time (Periods)	Mean	Std. Deviation	F value
P1(arrival time)	1.6	0.5	11.14*
P2 (30 mts)	1.6	0.5	
P3 (1 hr)	1.48	0.5099	
P4 (1 1/2 hr)	1.72	0.45826	
P5 (2 hrs)	2	0	

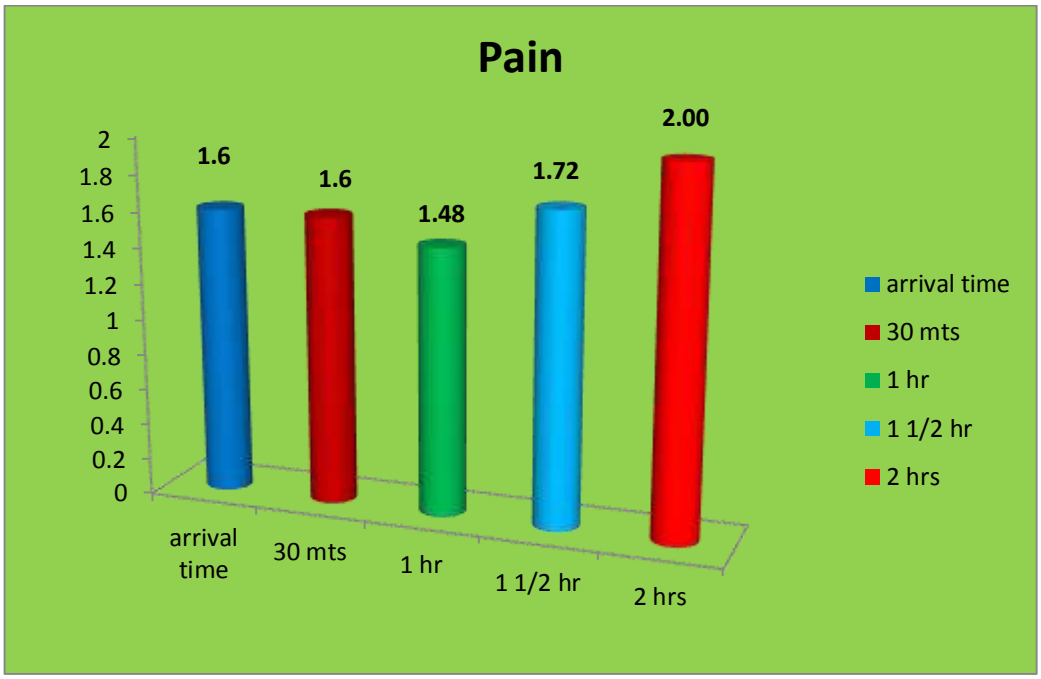

Figure 29 depicts the changes in pain of the participants. It could be noted that by 2 hours, post anaesthetic the pain score was good.

Table 12 Repeated measure ANOVA of temperature at various time periods in the PACU.

N=25

Time (periods)	Mean	Std. Deviation	F value
T1 (Arrival time)	2	0	1.0*
T2 (30 mins)	1.92	0.27689	
T3 (1 hr)	1.96	0.2	
T4 (1 1/2 hrs)	1.96	0.2	
T5 (2 hrs)	2	0	

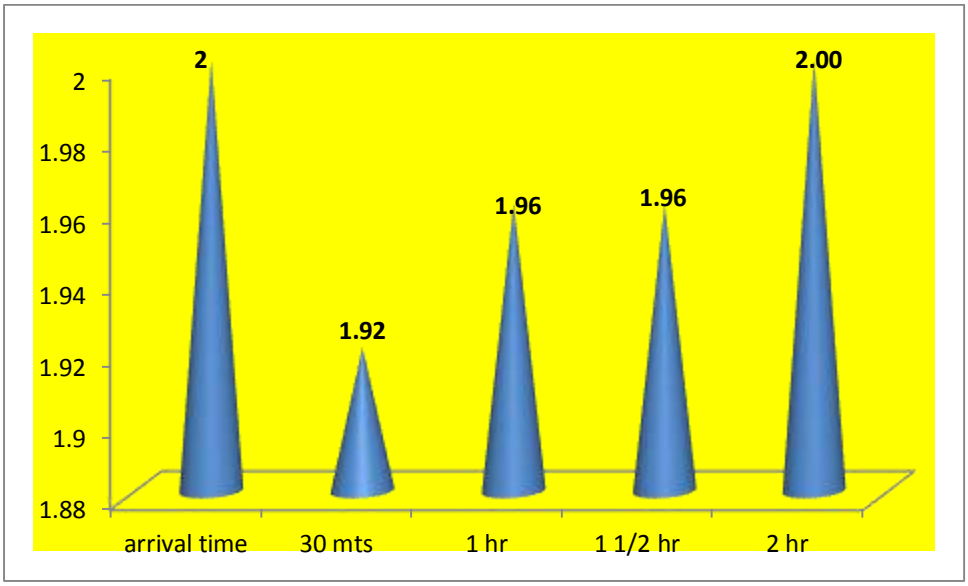

Table 30 depicts the changes in temperature of the participants. It could be noted that by arrival time and 2 hours, post anaesthetic the temperature was good.

Table 13 Repeated measure ANOVA of urine output at various time periods in the PACU.

N=25

Time periods	Mean	Std. Deviation	F value
UO 1(arrival time)	1.36	.48990	9.33*
UO 2 (30 mins)	1.44	.50662	
UO 3 (1 hr)	1.80	.40825	
UO 4 (1 1/2 hrs)	1.96	.20000	
UO 5 (2 hrs)	2.00	0.00000	

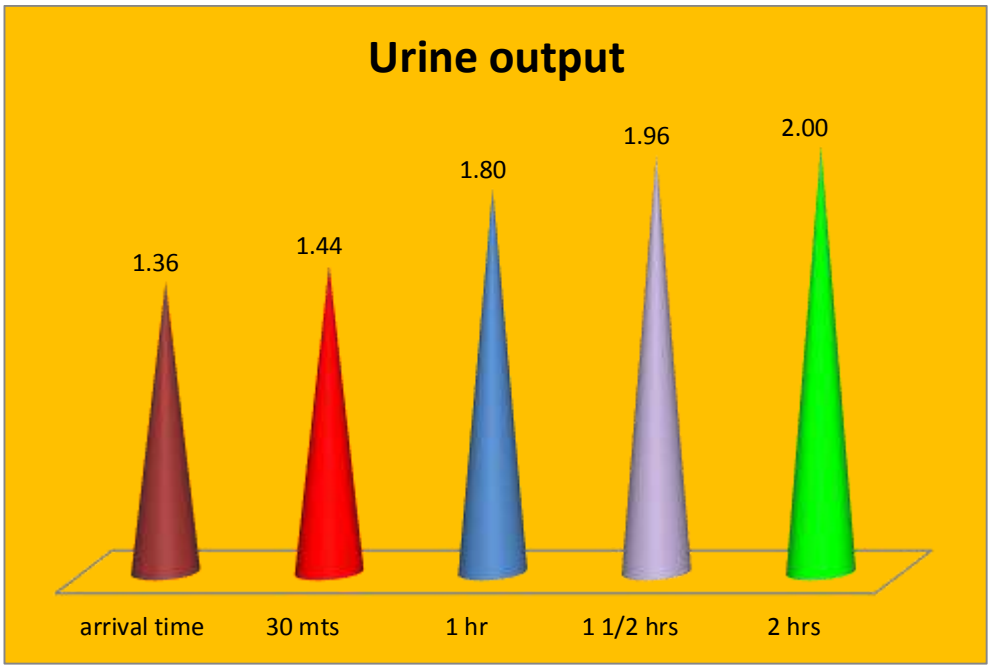

Figure 31 depicts the changes in urine output of the participants. It could be noted that by 2 hours, post anaesthetic the urine output was good.

Table 14 Repeated measure ANOVA of skin color at various time periods in the PACU.

N=25

Time periods	Mean	Std. Deviation	F value
Skin1 (arrival time)	1.36	.48990	1.8*
Skin2 (30 mins)	1.44	.50662	
Skin3 (1 hr)	1.80	.40825	
Skin4 (1 1/2hrs)	1.96	.20000	
Skin5 (2 hrs)	2.00	0.00000	

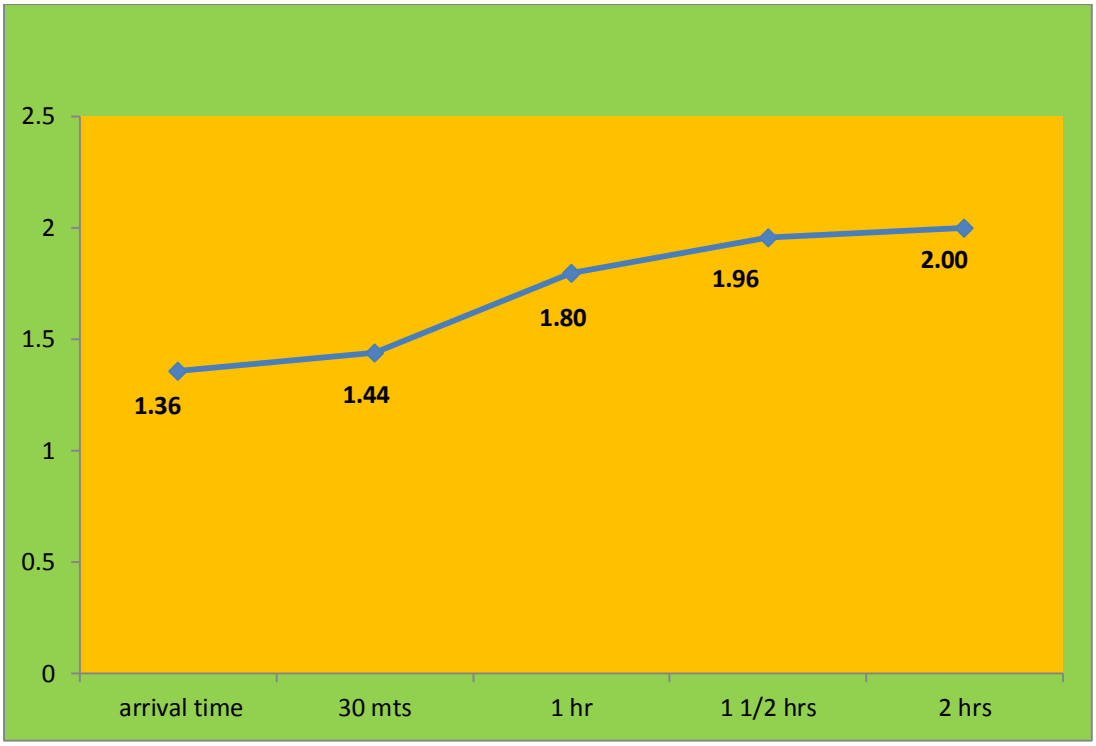

Figure 32 depicts the changes in skin color of the participants. It could be noted that by 2 hours, post anaesthetic skin color was good.

Table 15 Repeated measure ANOVA of reflex at various time periods in the PACU.

N=25

Time periods	**Mean**	**Std. Deviation**	**F value**
reflex1 (arrival time)	2.36	1.80000	1.0*
reflex2 (30 mins)	2.00	0.00000	
reflex3 (1 hr)	2.00	0.00000	
reflex4 (1 ½ hrs)	1.96	.20000	
reflex5 (2 hrs)	2.00	0.00000	

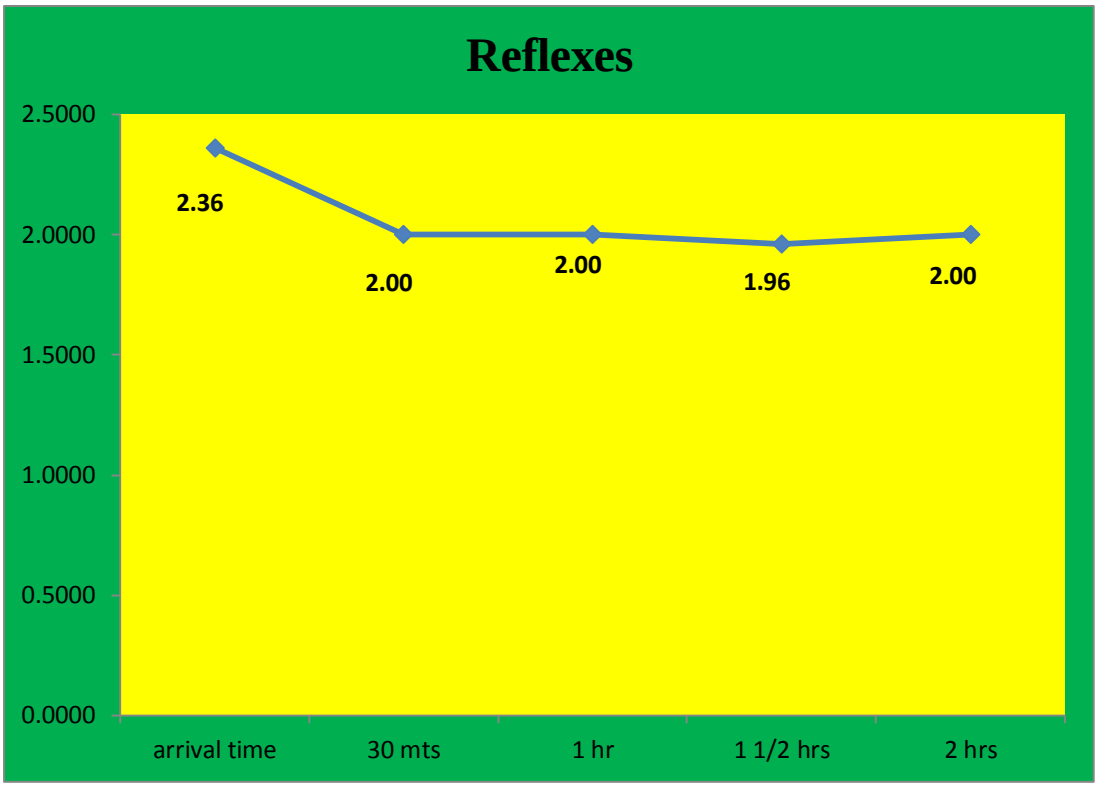

Figure 33 depicts the changes in protective reflex of the participants. It could be noted that by arrival time to 2 hours, post anaesthetic the reflex was good.

Table 16 Repeated measure ANOVA of activity at various time periods in the PACU.

N=25

Time periods	Mean	Std. Deviation	F value
A 1 (arrival time)	1.68	0.74833	2.19*
A 2 (30 mins)	1.68	0.74833	
A 3 (1 hr)	1.76	0.59722	
A 4 (1 1/2 hrs)	1.92	0.27689	
A 5 (2 hrs)	2	0	

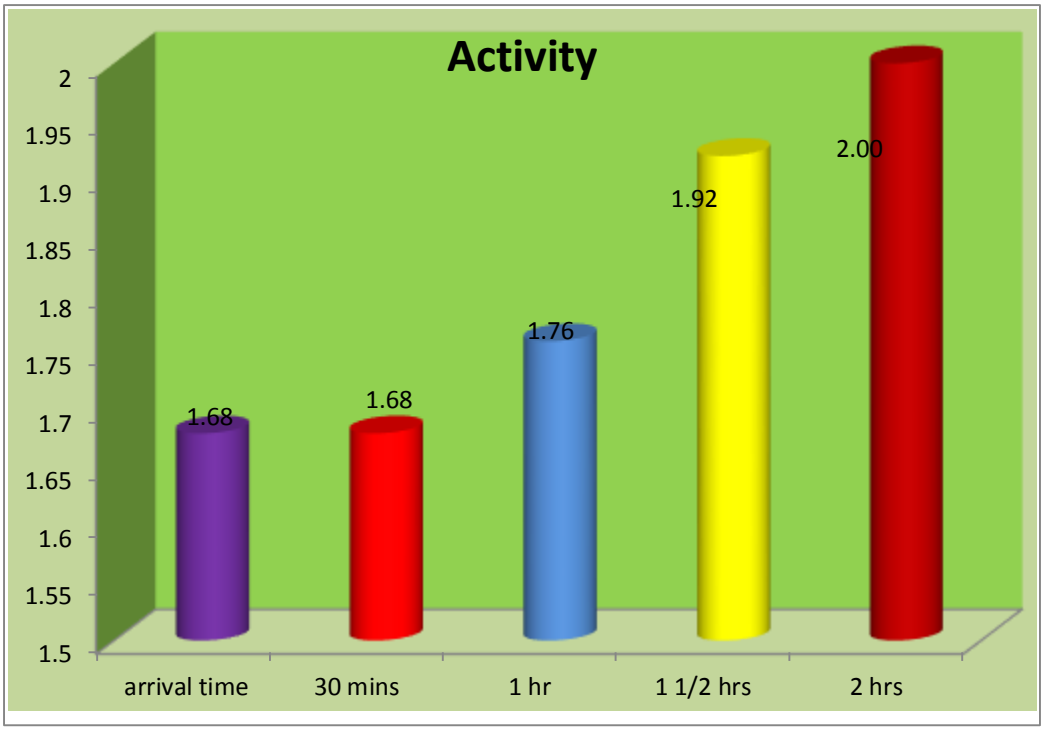

Figure 34 depicts the changes in the activity of the participants. It could be noted that by 2 hours, post anaesthetic the activity was good.

Table 17 Repeated measure ANOVA of wound drainage color at various time periods in the PACU.

N =25

Time periods	Mean	Std. Deviation	F value
Color1 (arrival time)	1.96	0.2	1.00*
Color2 (30 mins)	1.96	0.2	
Color3 (1 hr)	1.96	0.2	
Color4 (1 1/2 hrs)	2	0	
Color5 (2 hrs)	2	0	

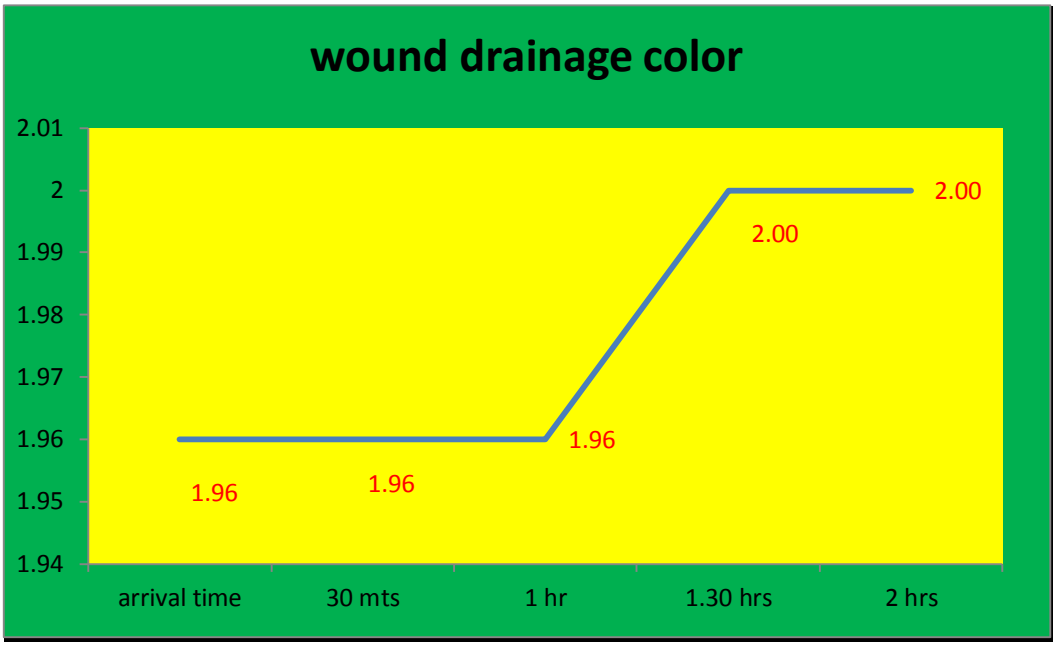

Figure 35 depicts the changes in wound drainage color of the participants. It could be noted that by 1 ½ hours and 2 hours, post anaesthetic wound drainage color was good.

Table 18 Repeated measure ANOVA of wound drainage amount at various time periods in the PACU.

N=25

Time periods	**Mean**	**Std. Deviation**	**F value**
Amount1 (arrival time)	1.44	0.5831	5.68*
Amount2 (30 mins)	1.52	0.58595	
Amount3 (1 hr)	1.88	0.33166	
Amount4 (1 ½ hrs)	1.96	0.2	
Amount5 (2 hrs)	2	0	

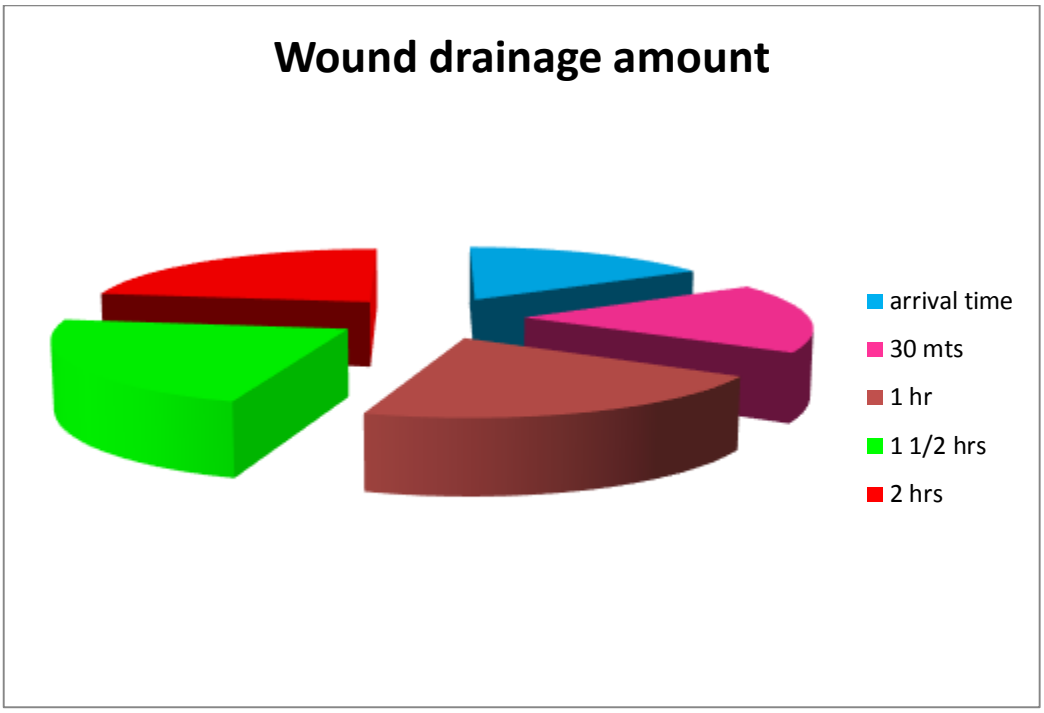

Figure 36 depicts the changes in the wound drainage amount of the participants. It could be noted that by 2 hours post anaesthetic the wound drainage amount was good

Table 19 Repeated measure surgical bleeding at various time periods in the PACU.

N=25

Time periods	Mean	Std. Deviation	F value
Bleeding1 (arrival time)	1.8	.50000	2.190*
Bleeding2 (30 mins)	1.80	.50000	
Bleeding3 (1 hr)	1.96	.20000	
Bleeding4 (1 ½ hrs)	1.96	.20000	
Bleeding5 (2 hrs)	2.00	0.00000	

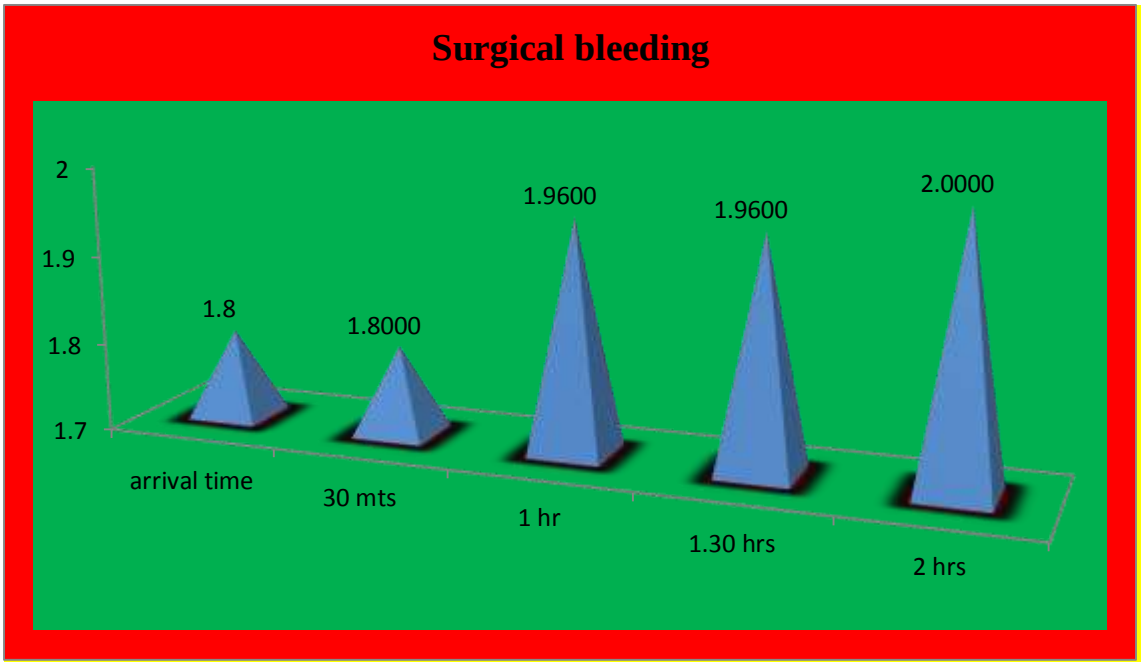

figure 38: depicts the changes in surgical dressing of the participants. It could be noted that by 2 hours post anaesthetic the surgical bleeding was good.

Table 20 Repeated measure ANOVA of nausea and vomiting at various time periods in the PACU.

N=25

Time Periods	Mean	Std. Deviation	F value
Nausea 1(arrival time)	1.72	.45826	6.46*
Nausea 2 (30 mins)	1.72	.45826	
Nausea 3 (1 hr)	1.92	.27689	
Nausea 4 (1½ hrs)	1.92	.27689	
Nausea 5 (2 hrs)	2.00	0.00000	

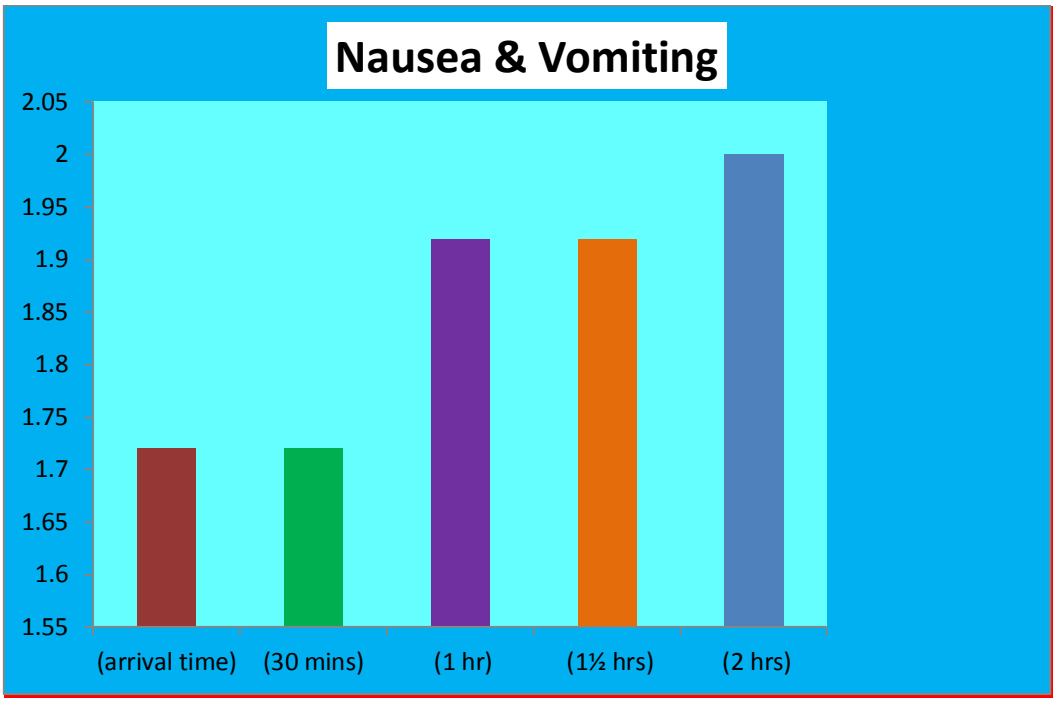

Figure 39: depicts the changes in nausea and vomiting of the participants. It could be noted that by 2 hours post anaesthetic Nausea and Vomiting was good.

CHAPTER- V

DISCUSSION, SUMMARY, CONCLUSION, IMPLICATIONS, LIMITATIONS AND RECOMMENDATION

This chapter deals with discussion, summary and conclusion drawn from the study. The study limitations, implications and recommendations in different areas of nursing practice, nursing administration, nursing research and nursing education in the future are considered here.

The present study is an approach and single group pre-test, post -test design is used to assess the effectiveness of modified early warning scoring system for execution of nursing interventions among patients underwent open abdominal surgeries for the first 2 hours in the PACU. The results of the study, according to the objectives are discussed as follows,

Demographic variables and modified early warning scoring system

It includes age, gender, marital status, education, occupation, previous operation, the presence of chronic diseases, type of anaesthesia.

MEWS parameters are oxygenation, respiratory rate, heart rate, blood pressure, consciousness, pain score, temperature, urine output, skin color, presence of protective reflex, activity, wound drainage color, amount, surgical bleeding, nausea& vomiting.

The first objective of the study was to assess the trend of early warning signs of patients following open abdominal surgeries.

Among 25 samples, 24 samples (96%) of them experienced the spo2 > 90% of oxygen. Remaining 1 sample was experienced by spo2>92% on room air.

Among 25samples, 11 samples (44%) experienced dyspnea (or) shallow breathing. Remaining 14 samples were experienced that they can deep breathe & cough well.

Among 25samples, the 1 sample heart rate was 111-129 b/m, 14 samples heart rate was 101-110 b/m, remaining 10 samples heart rate was 50-100 b/m.

Among 25samples, 12 samples, blood pressure was +/- 20-50 mmHg of pre-op level, remaining 13 samples, blood pressure was +/- 20mmHg of pre-op level.

Among 25 samples, 12 samples were conscious and arousable to call. Remaining 13 samples were conscious and fully awake.

Among 25 samples, 20 samples pain score was moderate (4-6), remaining 5 samples pain score was minimal (0-3).

Among 25 samples, 9 samples temperature was 98.6F-99.5F, remaining 16 samples temperature was 95.0F- 98.6F.

The urine output among 25 samples, 15 samples, urine output was 20-30 ml/HR, remaining 10 samples urine output was > 30 ml/HR.

The skin color among 25 samples, 4 samples had pale, dusky and yellow color skin and remaining 21 samples had normal pink color.

The presence of protective reflex among 25 samples, 4 samples had experienced diminished, sluggish gag reflex, remaining 21 samples had experienced the normal gag reflex.

The activity level of between 25 samples, 1 sample was not able to move any extremity, remaining 24 samples had normal movement of all 4 extremities.

The wound drainage color among 25 samples, 10 samples had sanguineous & remaining 15 samples had serous color drainage.

The wound drainage amount among 25 samples, 18 samples had a moderate amount of wound drainage & remaining 7 samples had minimal wound drainage.

Regarding surgical bleeding 24 samples experienced no surgical bleeding & remaining 1 sample experienced moderate bleeding.

The nausea and vomiting among 25 samples, 24 samples had moderate nausea & vomiting and treated with IV medications, the 1 sample had not experienced nausea & vomiting.

The second objective of the study was to execute nursing interventions based on early warning scoring system among patients following open abdominal surgeries.

Dyspnea:

1. Closely monitored respiratory rate & spo2
2. Head elevation
3. O2 administered
4. Nebulization therapy.

Hypertension:

1. Monitored blood pressure every 15 minutes
2. Monitored ECG continuously.
3. Closely monitored vital signs.
4. Cardiologist opinion obtained.
5. Administered antihypertensive medications as per order.

Hypotension, tachycardia, tachypnea:

1. Checked vital signs to gather baseline information
2. Applied crepe bandage to the lower extremities to promote venous return
3. IV fluids NS 500 ml was rushed intravenously over 20 mins to replace fluid volume.
4. Inj. Vasopressin 3 ml/HR was started.
5. Auscultated chest frequently for overload.

Bradycardia:

1. Inj. Atropine 0.6 mg IV stat given which decreases vagal tone and increases conduction through atrio ventricular node.
2. Monitored the heart rate continuously.
3. Monitored the ECG continuously.
4. Checked the heart sounds and lung sounds.

Hypothermia:

1. Monitored temperature frequently to evaluate effectiveness of intervention
2. Monitored neurological status of the patient.
3. Monitored vital signs to detect changes.
4. Provided supportive measures such as blankets, warmer
5. Administered IV fluids using fluid warmer to prevent hypovolemic Shock.

Hyperthermia:

1. Monitored the temperature frequently.
2. Given the cold applications.
3. Inj. Paracetamol 650 mg as per order
4. Given the sponge bath. Friend.

Dysuria:

1. Monitored the intake output chart.
2. Encourage to drink fluids.
3. Provided privacy.
4. Attempted to stimulate the relaxation of the urethral sphincter by opening the tape water.

Acute pain:

1. Provided comfortable position like left and right lateral as per client comfort.
2. Used non-pharmacological measures like watching T.V to reduce the perception of pain.
3. Administered analgesics like ink. Tramadol 1 amp as per order.
4. Inspected the surgical site for swelling.

Haemorrhage:

1. Closely monitored the vital signs.
2. Provided the IV fluids as per order.
3. Observed the surgical site, tube & dressing.

Nausea and vomiting:

1. Administered Inj. Ondansetron 2 ml as per order.
2. Provided oral hygiene to promote interest in drinking.
3. Encouraged to drink fluids.
4. Administered IV fluids DNS.

Third objective was to determine the effectiveness of MEWS among patients subjected to open abdominal surgeries.

The repeated measures ANOVA use used to determine the effectiveness of modified early warning scoring system. The subjects were followed during the arrival time & every 30 minutes once in the post anaesthesia care unit. The findings revealed that there is a significant difference at p value >. 05.

By the use of MEWS, the patients received better and quicker nursing interventions & were able to find the major symptoms as early as possible.

In the present study, the use of the MEWS and nursing guide helped early detection of complications and allowed early treatment. The aim of the MEWS use is early recognition of the patients with worsening status and to make early intervention. It has been indicated that the MEWS allows the health care personnel to identify the major complications earlier increase awareness of the requirements of uses of MEWS among critically ill patients, and to facilitate the early recognition of patients with high risk.

Conclusion:

The use of MEWS when monitoring patients during their PACU stay had positive effects on outcomes and provided early recognition and prompt treatment of the complications. The use of the MEWS also be continued after the patient is transferred toward from PACU and the follow-up should be maintained in this manner up to at least 24 hours after the operation.

Implications:

Nurses who are with the patient around the clock playing a vital role in the post-operative care of patients with open abdominal surgery. The findings of the study have several implications in nursing.

Nursing Practice:

1. The study gives awareness among the nurses in identifying the problems and complications at an early stage.
2. In Post anaesthesia care unit, this study will provide insight among the nurses to detect certain problems like
3. The developed nursing module will help in planning nursing interventions at an early stage.
4. The present nursing module can be used by the nurses in various critical care settings.

Nursing Education:

1. Integration of the theory and practice is a vital need and it is important in nursing education. This study will implicate among learners to develop observational skills and do systematic assessment which will help them detect the problems and motivate them to render care to the patient at an early stage. It also promotes curiosity among learners to participate with multi health team members to provide collaborative care.

2. Nurses who are working in the post anaesthesia care unit are expected to have thorough knowledge on management of patients underwent open abdominal surgery. Early detection and identification of existing problems need quick assessment skills among nurses to provide better care,.
3. Nursing module directs the nurse educator to teach the students to anticipate problems of patients underwent open abdominal surgeries and execution of priority based related nursing interventions at a moment.

Nursing Research:

1. Utilization of findings and dissemination of knowledge in nursing practice will help to identify the complications at an early stage.
2. This study directs the nursing personnel to broaden their horizons, knowledge and skills to elicit problems and to conduct many more research to raise their power to implement prompt activities at the given setup.
3. The study will imply the nurse educator to conduct and motivate the learner to select a related study with all dimensions, namely physical, mental, emotional, social and spiritual changes encountered by the patients underwent open abdominal surgery.
4. Utilization of findings and dissemination of knowledge which helps the nurse educator to develop ongoing assessment, care and technology that made in the health care system.
5. Thorough research, dissemination of knowledge will give a vision for growing autonomy in nursing discipline.

Nursing Administration:

1. Nurse administrators can plan and organize in service education programs to the nurses based on the study findings.
2. Nursing administrator can encourage his/her subordinate to do further research regarding the problem of patients underwent Open abdominal surgery based on the study result.
3. It motivates the nurse administrator to allocate resources to do further studies in the post anaesthesia care unit.
4. Through research findings the institution can formulate policy and procedures on care of patients underwent open abdominal surgery at the given set up by conducting further research in this area to standardize the care

LIMITATIONS

- Study was limited to a small setting without randomization
- The result cannot be generalized to other hospital OT's
- As sample size are small, the results cannot be generalized.

RECOMMENDATIONS

- A study can be replicated involving large population and sample for a longer period. So that, the findings can be generalized.
- A similar study can be done in other hospital settings.

CHAPTER – VI

ABSTRACT

A study entitled "a study to assess the effectiveness of early warning scoring system and execution of nursing interventions among patients subjected to open abdominal surgeries in the PACU at KMCH Coimbatore"

Objective: The aim of the study is to assess the trend of early warning signs of patients following open abdominal surgeries, to determine the effectiveness of MEWS among patients subjected to open abdominal surgeries.

Design: single group pretest posttest design.

Sample size: 25 subjects, both male and female above age of 20years following open abdominal surgeries.

Conceptual framework: Ida jean Orlando's nursing theory (1926)

Data collection procedure: After getting the verbal consent, the demographic data and clinical characteristics were assessed in PACU by using modified early warning scoring system.

Results: Among 25 samples, 24 samples (96%) experienced the spo2 > 90%, 1 sample was experienced by spo2 >92% on room air. Among 25 samples, 11 samples experienced dyspnea (or) shallow breathing, remaining 14 samples experienced that they can deep breathe & cough well. **Conclusion:** The MEWS provides early identification and treatment of patients developing complications. Thus, it is recommended to use the MEWS and nursing interventions in post anesthetic care unit.

CHAPTER – VII

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APPENDIX – A

PART I

DEMOGRAPIC VARIABLES

1. Patient Name :

2. Age :

3. Gender :

4. Marital Status :

5. IP Number :

6. Education :

7. Occupation :

8. Previous Operation :

9. Presence of Chronic Diseases :

10. Medical Diagnosis :

11. Surgical Procedures :

12. Type of anaesthesia :

APPENDIX - B
CLINICAL VARIABLES
(Modified Early Warning Scoring System)

POST OPERATIVE CARE UNIT									
NAME :			**OPERATION :**						
AGE/SEX :			**DATE :**						
IP NO :			**ARRIVAL TIME :**						
MODIFIED EARLY WARNING SCORING SYSTEM									
SNO	**CHARACTER**	**2**	**1**	**0**	**TIME**				
					Arrival time	**30mins**	**1hr**	**1 1/2 hrs**	**2hrs**
1	**PATTERN OF RESPIRATION**	SPO2 >92% in room air	SPO2 >90% on Oxygen	SPO2<90% on oxygen					
2	**RR**	Can deep breathe & cough well	Dyspnea or shallow breathing	Apnea					
3	**HR**	50 - 100 b/m	101 - 110 b/m	111 - 129 b/m					
4	**BP**	BP +/- 20mmHg of pre-op level	BP +/- 20-50mmHg of pre-op level	BP +/- 50mmHg of pre-op level					
5	**CONCIOUSNESS**	Fully awake	Arousable on Calling	Unresponsive					
6	**PAIN SCORE**	Minimal (0-3)	Moderate (4-6)	Severe (7-10)					
7	**TEMPERATURE**	95.0°F - 98.6°F	98.6°F - 99.5°F	99.5°F - 100.9°F					
8	**URINE OUTPUT**	> 30 ml/hr.	20 - 30 ml/hr.	< 20 ml/hr.					
9	**SKIN COLOUR**	Pink	Pale, "dusky" or "blotchy", discoloration, as well as jaundice	Cyanotic					

10	**PRESENCE OF PROTECTIVE REFLEX**	Gag reflex is Present	Diminished Sluggish	Gag Reflex Absent					
11	**ACTIVITY**	Able to move 4 extremities	Able to move 2 extremities	Not able to move any extremity					
12	**WOUND DRAINAGE COLOUR**	Serous	Sanguineous	SeroSanguinous					
13	**WOUND DRAINAGE AMOUNT**	Minimal	Moderate	Heavy					
14	**SURGICAL BLEEDING**	None (or) Minimal	Moderate	Severe					
15	**NAUSEA AND VOMITING**	None	Moderate and treated with IV medications	Severe and poorly controlled					

APPENDIX – C

INSTITUTIONAL ETHICS COMMITTEE APPROVAL

KMCH ETHICS COMMITTEE
KOVAI MEDICAL CENTER AND HOSPITAL LIMITED
Excellence in Healthcare
99, Avanashi Road, Coimbatore - 641 014. INDIA
✆ (0422) 4323800, 4323619 | Fax : (0422) 4270805 | E-mail : ethics@kmchhospitals.com
EC Reg. No : ECR / 112 / Inst / TN / 2013

Ref: EC/AP/606/04/2018
23.04.2018

APPROVED

To

Mrs. A. Saratha, M.Sc. (N),
Associate Professor – Department of Medical Surgical Nursing,
KMCH College of Nursing,
Coimbatore – 641 014.

Dear Mrs. A. Saratha,

The proposal entitled "**A study to assess the effectiveness of early warning scoring system on execution of nursing interventions among patients subjected to open abdominal surgeries in PACU at KMCH, Coimbatore**", submitted by **Mrs. N.Dhanalakshmi,** under your supervision was reviewed by the Ethics Committee in its meeting held on **21.04.2018** and grants ethical clearance for the study .

Regards,
Yours Sincerely,

Dr.M.S. Thamizharasi,
Chairperson,
KMCH Ethics Committee.

Dr. M.S.Thamizharasi
M.D.,D.G.O.,PG Dip (Psych)
Chairperson
Ethics Committee
Kovai Medical Center and Hospital
Coimbatore - 641 014

Copy to Clinical Guide:

Dr. N.Selvarajan, MD., (AIIMS),
Consultant and Head of the Department – Anaesthesiology,
Kovai Medical Center and Hospital,
Coimbatore – 641 014.

ETHICS COMMITTEE

APPENDIX – D

LETTER OF EXPERT'S GUIDANCE

KMCH COLLEGE OF NURSING

(Approved by the Government of Tamil Nadu & The Tamil Nadu Nurses & Midwives Council, Chennai.
Recognized by the Indian Nursing Council, New Delhi and Affiliated to the Tamil Nadu Dr. M.G.R. Medical University, Chennai)
KMCH Campus, Avinashi Road, Coimbatore – 641 014. INDIA
Ph: (0422) 4323740, 2369321 Telefax : (0422) 2627525 Website: kmchcon.ac.in E-mail: nursing@kmch.ac.in

Prof. DR. S. Madhavi, M.Sc(N).,Ph.D.,
Principal

26th March, 2018

Ref : KMCT/6226/03/18

To

Dr. N. Selvarajan MD., (AIIMS)
Consultant
Head of department of anesthesiology
Kovai Medical Center and Hospital,
Coimbatore – 14.

Dear Sir,

Greetings to you from KMCH College of Nursing.

I submit that one of our M.Sc(N) II Year student by name Mrs. N. Dhanalakshmi specializing in Medical Surgical Nursing in our college desires to conduct a study titled " A Study to assess the Effectiveness of Early Warning scoring system on execution of nursing interventions among patients subjected to open abdominal surgeries in PACU"at Kovai Medical Center and Hospital, Coimbatore." as a part of her M.Sc(N) curriculum.

As she is in need of Medical Expert to complete the study, I request you to guide the student.

Thanking you.

Yours truly

PRINCIPAL

26/3/2018
Dr. N. SELVARAJAN, M.D.,
Head of the Dept. of Anesthesiology
Kovai Medical Center & Hospital Ltd.
Coimbatore-641 014

Administrative Office :
Kovai Medical Center Research and Educational Trust
No.940/1A&B, Kovai Estate, Kalapatti Road, Coimbatore - 641 048. INDIA
Ph : (0422) 2369321 E-mail : info@kmch.ac.in

APPENDIX – E

CERTIFICATION OF TOOL VALIDITY

CERTIFICATE OF TOOL VALIDITY

This is to certify that I have Perused that Research proposal submitted by Register No. 301610452entiled"**A study assess the effectiveness of early warning scoring system and execution of nursing interventions among patients subjected to open abdominal surgeries in post anaesthesia care unit at KMCH, Coimbatore".**

I found that the Tool of the content is appropriate.

DATE:

SIGNATURE AND SEAL

CERTIFICATE OF TOOL VALIDITY

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I found that the Tool of the content is appropriate.

DATE:

SIGNATURE AND SEAL

Dr. N. SELVARAJAN, M.D.,
Head of the Dept. of Anaesthesiology
Kovai Medical Center & Hospital Ltd,
Coimbatore-641 014

CERTIFICATE OF TOOL VALIDITY

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I found that the Tool of the content is appropriate.

DATE: 7/8/18

SIGNATURE AND SEAL

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I found that the Tool of the content is appropriate.

DATE:

SIGNATURE AND SEAL

Consultant Anaesthesiologist,
Koval Medical Center And Hospital Ltd.,
Avinashi Road, Coimbatore-641 014.

APPENDIX – F

CERTIFICATION OF CONTENT VALIDITY

CERTIFICATE OF CONTENT VALIDITY

This is to certify that I have perused that Research proposal submitted by Register No. 301610452entiled"**Effectiveness of early warning scoring system and execution of nursing interventions among patients subjected to open abdominal surgeries in post anaesthesia care unit at KMCH, Coimbatore".**

I found that the methodology of the content is appropriate.

DATE:

SIGNATURE AND SEAL

Consultant Anaesthesiologist,
Kovai Medical Center And Hospital Ltd.,
Avinashi Road, Coimbatore-641 014.

CERTIFICATE OF CONTENT VALIDITY

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I found that the methodology of the content is appropriate.

DATE: 7/8/18

SIGNATURE AND SEAL

Dr. D. Arunkumar MD., FNCA.
Consultant Anaesthetist
Reg. No : 66876

CERTIFICATE OF CONTENT VALIDITY

This is to certify that I have Perused that Research proposal submitted by Register No. 301610452entiled"**A study assess the effectiveness of early warning scoring system and execution of nursing interventions among patients subjected to open abdominal surgeries in post anesthesia care unit at KMCH, Coimbatore".**

I found that the methodology of the content is appropriate.

DATE:

SIGNATURE AND SEAL

Dr. N. SELVARAJAN, M.D.
Head of the Dept. of Anaesthesiology
Kovai Medical Center & Hospital Ltd.
Coimbatore-641 014

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I found that the methodology of the content is appropriate.

DATE:

A. Sanatte

SIGNATURE AND SEAL

APPENDIX - G

LIST OF EXPERTS

1. **Prof. DR. S. Madhavi, M.Sc. (N), Ph.D.,**
   Principal
   Department of Medical and Surgical nursing,
   KMCH College of Nursing,
   Coimbatore – 641014

2. **Dr. N. Selvarajan, M.D., AIIMS.,**
   Head of Department of Anaesthesiology
   Kovai Medical Center and Hospital,
   Coimbatore – 641014.

3. **Dr. Subbiah Chelliah., D.A., FRCA.,**
   Consultant Anaesthetist,
   Kovai Medical Center and Hospital,
   Coimbatore – 641014.

4. **Dr. D. Arunkumar, M.D., FRCA.,**
   Consultant Anaesthetist,
   Kovai Medical Center and Hospital,
   Coimbatore – 641014.

5. **Prof. DR. Balasubramani, M.Sc (N), Ph.D.,**
   Department of Medical and Surgical nursing,
   KMCH College of Nursing,
   Coimbatore – 641014

6. **Prof. DR. Viji, M.Sc (N), Ph.D.,**
   Department of Medical and Surgical nursing,
   KMCH College of Nursing,
   Coimbatore – 641014

7. **Prof. P. Kuzahanthaivel, M.Sc (N).,**
Department of Medical and Surgical nursing,
KMCH College of Nursing,
Coimbatore – 641014.

8. **A.Saratha M.Sc (N), Associate professor,**
Department of Medical and Surgical Nursing,
KMCH College of Nursing,
Coimbatore – 641014